AFTER THE BATTLE

NORDHAUSEN

SINKING OF THE *BLÜCHER*

Number 101

AFTER THE BATTLE

NUMBER 101

Editor-in-Chief: Winston G. Ramsey

Editor: Karel Margry

Published by
Battle of Britain International Ltd.,
Church House, Church Street,
London E15 3JA, England

Telephone: 0181-534 8833

Fax: 0181-555 7567

E-mail: afterthebattle@mcmail.com

Printed in Great Britain by
Trafford Print Colour Ltd.,
Shaw Wood Way, Doncaster DN2 5TB.

© Copyright 1998

After the Battle is published quarterly on the 15th of February, May, August and November.

United Kingdom Newsagent Distribution:
Seymour Press Ltd., Windsor House, 1270 London Road, Norbury, London SW16 4DH.
Telephone: 0181-679 1899

United States Distribution and Subscriptions:
RZM Imports, PO Box 995, Southbury, CT, 06488
Telephone: 1-203-264-0774

Canadian Distribution and Subscriptions:
Vanwell Publishing Ltd., 1 Northrup Crescent, St. Catharines, Ontario L2M 6P5.
Telephone: (905) 937 3100 Fax: (905) 937 1760

Australian Subscriptions and Back Issues:
Technical Book and Magazine Company, Pty, Ltd., 289-299 Swanston Street, Melbourne, Victoria 3000.
Telephone: 663 3951

New Zealand Distribution:
South Pacific Books (Imports) Ltd., 6 King Street, Grey Lynn, Auckland 2. Telephone: 762-142

Italian Distribution:
Tuttostoria, Casella Postale 395, 1-43100 Parma.
Telephone: 0521 290 387, Telex 532274 EDIALB I

Dutch Language Edition:
Quo Vadis, Postbus 3121, 3760 DC Soest.
Telephone: 035 6018641

CONTENTS

NORDHAUSEN 2

IT HAPPENED HERE
The Sinking of the *Blücher* 44

UNITED KINGDOM
Royal Gunpowder Factory Sequel 49

FROM YOUR NEW EDITOR 52

Front Cover: The former underground V2 facility at Nordhausen reveals its secrets. (Deutsches Technik-Museum, Berlin)

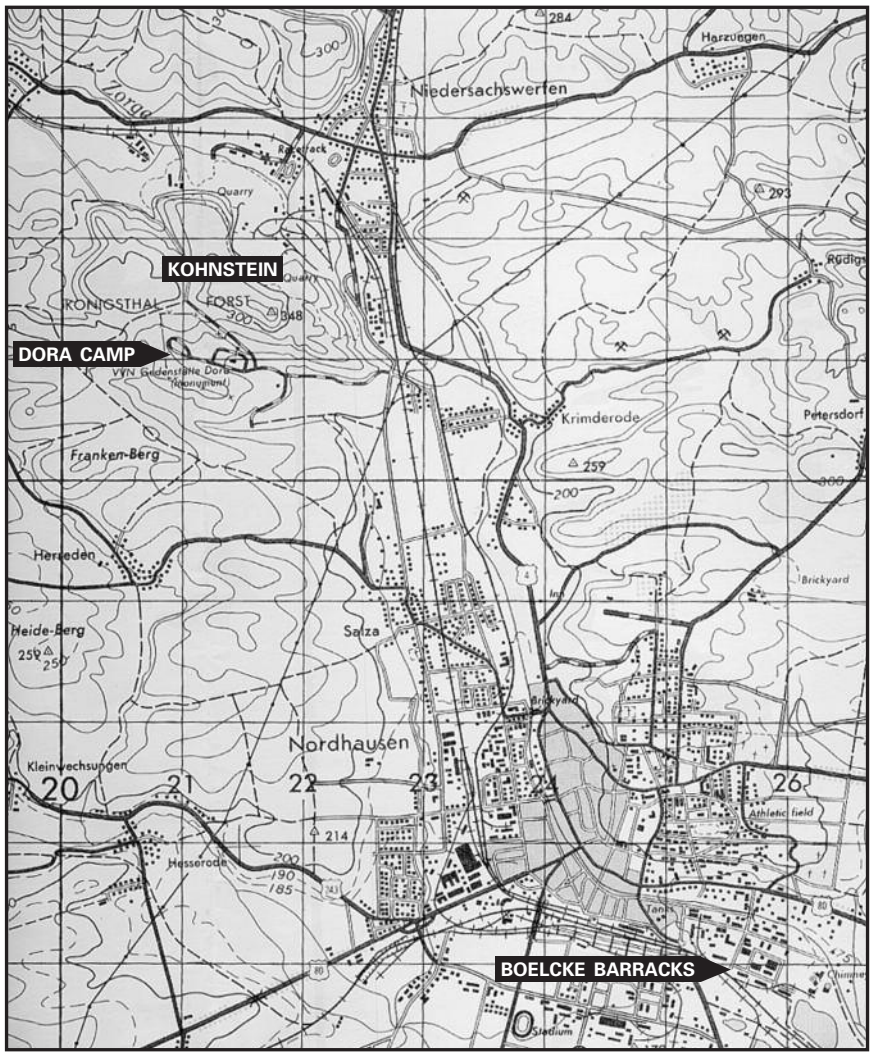
Centre Pages: *Left:* The sealed-up entrance to Tunnel A. *Right top:* The 'Dora' camp crematorium; *Bottom:* Camp hut reconstructed from parts of three surviving original buildings. (Karel Margry)

Back Cover: *After the Battle* authors, contributors and guests at the celebration to mark the publication of the 100th issue. (Steve Casely)

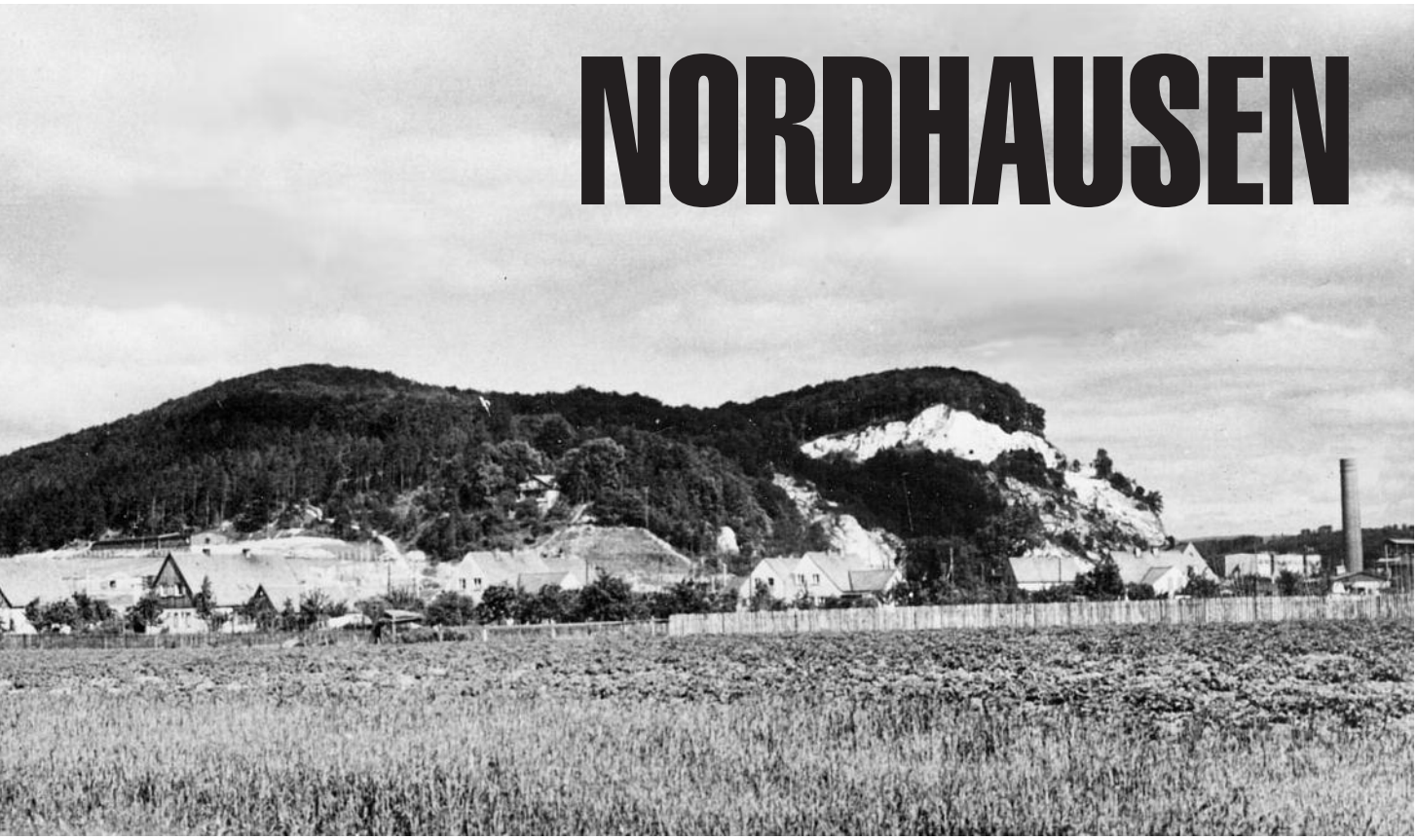
Acknowledgements: For help with the Nordhausen story, Karel Margry would like to thank Dr. Cornelia Klose, director; Herr Torsten Hess, historian; and Frau Christine Janischefski, archivist, of the Gedenkstätte Mittelbau-Dora; Manfred Bornemann and Fred Dittmann for permission to use the excellent maps drawn by them; and Percy Upton for the loan of photographs. Our very special thanks go to Alvin Gilens for allowing us to use the pictures he took inside the Kohnstein mountain.

Photo Credits: BA — Bundesarchiv. GSMD — Gedenkstätte Mittelbau-Dora. IWM — Imperial War Museum, London. RIOD — Rijksinstituut voor Oorlogsdocumentatie, Amsterdam. USNA — US National Archives.

In the history of Nazi concentration camps, and particularly labour camps, there is probably no place that bears the same stigma of wretchedness as 'Dora-Mittelbau' at Nordhausen. Nordhausen lies in the southern Harz mountains in central Germany. From 1943, when the Allied bombing offensive threatened to bring Germany's above-ground industrial production to a standstill, it became the centre of a whole complex of underground factories, the most important of which was the Mittelwerk in the Kohnstein mountain, which produced three of Germany's best-known secret weapons: the V1 flying bomb, the V2 rocket and jet engines for the Me 262 and Ar 234 fighter. With over 20 kilometres of underground galleries, it was the largest underground factory in the world. Some 20,000 slave workers were driven to extinction here to implement some of Germany's greatest wartime scientific experiments, but they laboured late and in vain, for the products they yielded had little impact on the war. The V1 and V2 are the only weapons which cost more lives in production than in deployment. Captured intact by the Americans in April 1945, the underground factory was handed over to the Soviets who proceeded to strip it clean and then, in 1948, sealed it by blowing up the entrances. After the war, former camp 'Dora' became an East German memorial site, but for nearly 50 years the underground galleries in the Kohnstein remained inaccessible. Now, with Germany re-unified, the Gedenkstätte has found a new life, and visitors can actually enter the tunnel system.



NORDHAUSEN



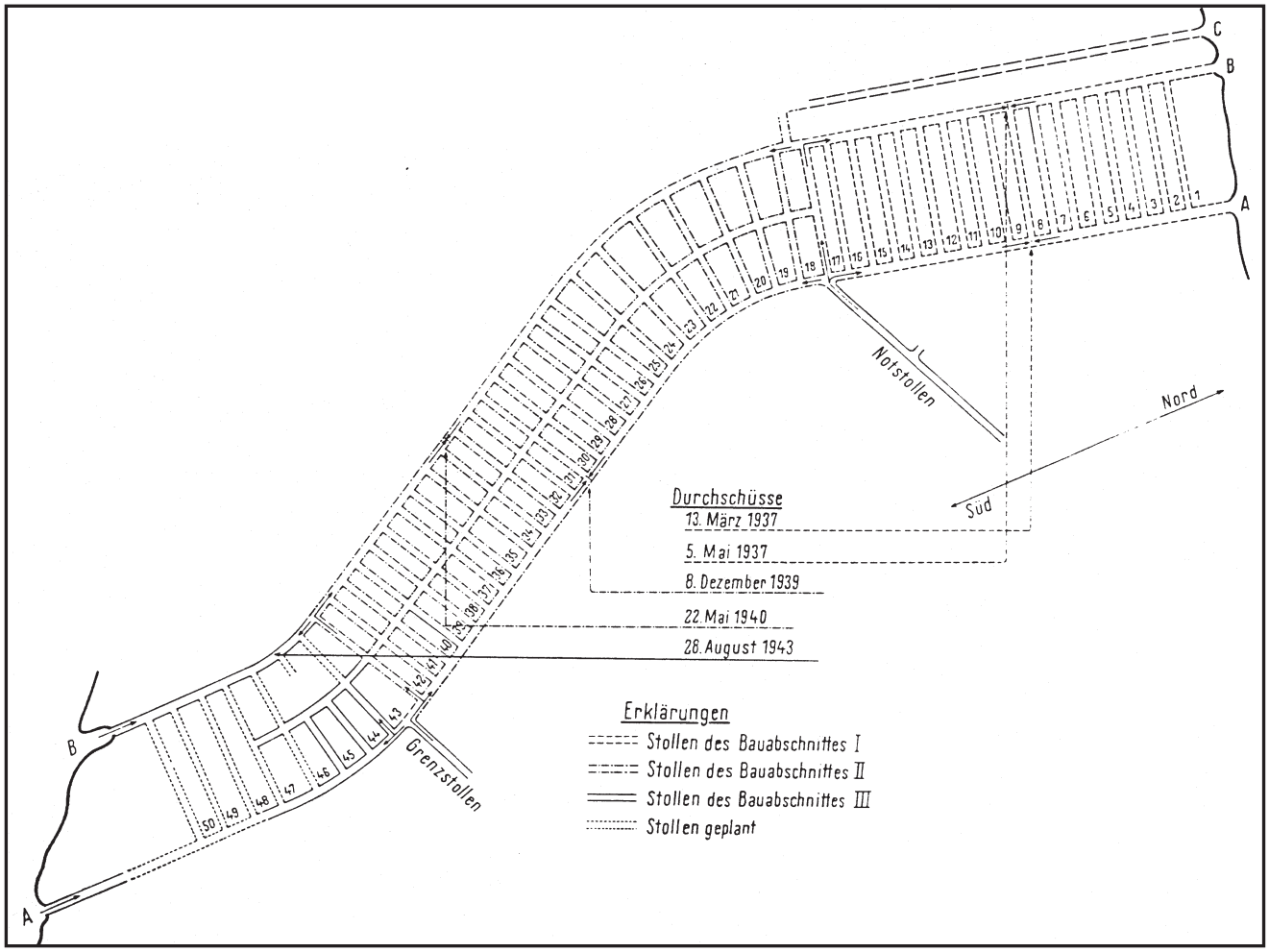
The Kohnstein lies just north-west of Nordhausen, and is actually closer to the village of Niedersachswerfen, which lies along its eastern face. A gypsum quarry was established here in the late 19th century, and decades of open-air mining had already radically altered the shape of the mountain by the time the secret underground factory moved in in 1943. This is how the mountain looked from the south in early 1945. Niedersachswerfen is on the right, and the southern entrances to the tunnel system and camp 'Dora' can be seen below the tree line on the far left. (This picture was taken by the British scientific research team which surveyed the Mittelwerk after its capture by the Allies in April 1945.) (BA)

By Karel Margry

When in August 1943, the German rocket development centre at Peenemünde on the Baltic coast was destroyed by British bombers (see *After the Battle* No. 74), the transfer of V2 rocket series production to underground factories became acute. However, the decision to go underground had already been taken earlier.

Ten months before, on October 3, 1942, the V2 (also known as Aggregat 4, or A4) had made its first successful launch at the Heeresversuchsanstalt (HVA — Army Experimental Station) Peenemünde. On December 22, Hitler approved a plan submitted by Albert Speer, his Minister for Armament and Ammunition, for the setting up of an experimental series production of 500 V2s to be produced at Peenemünde and at the Zeppelin works at Friedrichshafen. On January 15, 1943, Speer appointed Gerd Degenkolb, an energetic manager who had proved his mettle in locomotive production, to head a Sonder-Ausschuss A4 (A4 Special Committee) to carry out this order.

The photographer stood just outside the hamlet of Krimderode, about halfway between Nordhausen and the mountain, near where the village road crosses the Harz-Querbahn (the narrow-gauge railway which runs right across the Harz mountains from Nordhausen 60 kilometres north to Wernigerode). Note that the mountain has seen spectacular further changes in the decades since 1945, the entire eastern (right) half having now fallen victim to continued quarrying.



What later became the V-weapon underground factory was initially designed as a secret storage facility for Germany's strategic oil and lubricants reserve. Planning on the ladder-shaped complex was begun in 1934 by a state-controlled company named the Wirtschaftliche Forschungsgesellschaft (Wifo), and tunnelling proceeded in three phases. The first phase (1936-37) saw completion of the first 18 galleries; the second (1937-40) brought it as deep as Gallery 42; and the third (1941-43) had only reached Gallery 45 when, in July 1943, the Wifo was forced to evacuate the fuel depot to make room for production of the V2. (Map drawn by Manfred Bornemann.)

Within his Special Committee, Degenkolb created several 'working committees' each charged with taking care of a specific part of the task at hand, and coordinating the efforts of the Peenemünde technicians and the supply industry. There were seven logistical and supply committees: Raw Materials, Oxygen, Workforce, Deliveries, Transport, Building Projects, and Installations & Assets; two rocket technical committees: Fuselages and Electrical Equipment; and one Production Planning committee. The latter, led by Detmar Stahlknecht, was based at Peenemünde, Raw Materials was in the Ruhr area, all others had their headquarters in Berlin.

Oberst Walter Dornberger, the chief of the Rocket Development Section in the Heereswaffenamt (Army Ordnance Department) who had led the Army's rocket programme since 1933, soon grew unhappy with the new set-up as he thought the rocket production could best remain under complete Army control and, furthermore, could only succeed if given a top priority status. But he had no choice but to go along.

In April, Degenkolb raised the V2 production target from 600 a month at two production sites (Stahlknecht Programme) to 900 a month in three places: at Peenemünde, at Friedrichshafen, and at the Rax locomotive factories in Wiener-Neustadt (Degenkolb Programme). The reason for spreading production was to make it less vulnerable to air attacks, but Degenkolb already realised that the best solution was to create underground factories. Feverishly, his Special Committee, the Heereswaffenamt and the HVA Peenemünde began scouting Germany and occupied Europe for a suitable site for such a factory. The risk of above-ground production was brought home on June 22, when the RAF bombed the Friedrichshafen works, paralysing V2 production there.

Two days before, on June 20, Hitler had stipulated to Speer that the V2 programme was now more urgent than all other armament programmes, a top priority which was confirmed after Dornberger (newly promoted to Generalmajor) and his chief engineer, Wernher von Braun, had presented the new weapon in a personal interview with Hitler at the Wolfsschanze on July 7. Finally, all industrial resources of the Reich would become available for rocket production.

Until now, rockets had been a concern of the armed forces and the armaments ministry. However, on July 10, Reichsführer-SS Heinrich Himmler, who for a long time had been looking for an opportunity to get a finger into the rocket programme, convinced Hitler that he should be put in charge of security against espionage and sabotage of the V2 project. It was the first step in a development that would eventually give the SS complete control of the whole rocket programme.

Meanwhile, the search for underground facilities continued. Then, around the middle of July, Paul Figge, chief of the Deliveries Committee, heard in Kassel about a giant underground oil depot in the Kohnstein mountain at Niedersachswerfen near Nordhausen in the southern Harz region in central Germany. Figge at once travelled to Nordhausen to inspect the facilities, and immediately saw that it was exactly what the rocket planners had been looking for.

Lying north-west of Nordhausen and west of Niedersachswerfen and rising steeply from the countryside, the Kohnstein is composed almost entirely of limestone (anhydride) and gypsum (calcium sulphite), soft stone which lends itself to mining easily. On its northern and eastern sides, vertical white cliffs rise 120 metres high. On top of the limestone lies a thin layer of the harder dolomite, which in turn is covered by loam. Several forest-covered tops crown the mountain: the Kohnsteinkopf (332m), Hoher Kopf (348m), Gängerkopf (316m) and Birkenkopf (300m). Three valleys — the Höllental, Gängertal and Siebental — cut it steep flanks.

Quarrying at the Kohnstein had begun as early as the 1870s. Gypsum is a prime component for the production of synthetic ammonia, which itself is a prime component for the production of nitrogenous fertilizer and, more important in wartime, nitrogenous explosive. In 1916-17, the Badische Anilin- & Soda-Fabrik established a gypsum factory at Niedersachswerfen to supply its newly-built ammonia factory at Merseburg. Open-cast mining was begun, deliveries being some 32,000 tons in 1918, rising to 82,000 the following year.

After World War I, with the complete fusion of the eight major paint-producing factories in Germany into the huge IG Farben GmbH in 1925, the Gipswerk Niedersachswerfen factory became part of that concern. Production rose steadily, reaching

1,244,000 tons in 1928, but dropping dramatically after 1930 to about a third of that as a result of the economic depression. The quarry never regained the high production volumes of the 1920s, for ammonia-based fertilizers were increasingly replaced by other types of fertilizers. By 1935, some 11 million tons of lime and gypsum, and 2 million tons of waste, had been mined, representing a total of 4.3 million cubic metres of earth moved. The waste had been dumped in the Gängertal, completely filling up the valley and changing the north-eastern face of the Kohnstein massif.

In 1934, one year after the Nazis came to power, the IG Farben and the Deutsche Gesellschaft für öffentliche Arbeiten (German Company for Public Works — an organisation of the Ministry of Economics) jointly founded the Wirtschaftliche Forschungsgesellschaft (Economic Research Company — Wifo) as an organisation to secure the supply of strategic raw materials in case of war. One of its projects was the creation of an underground central fuel depot (Zentrales Kraftstoff-Lager). Looking for a suitable site, the IG Farben proposed to the Wifo to dig tunnels into the Kohnstein. The geological conditions made tunnelling easy, the site was well connected to the German traffic system, and the project was financially advantageous to both parties: sharing the cost of tunnelling, the Merseburg factory would get its lime cheap, and the Wifo its underground depot at a lower cost. The new depot was named the Wifo-Aussenstelle (sub-works) Niedersachswerfen.

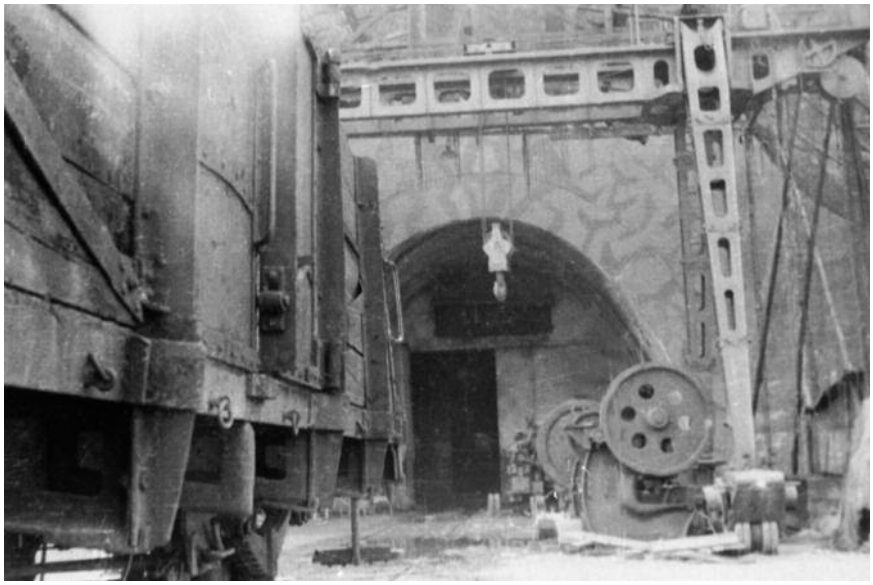
All that existed at that time at the Kohnstein quarry was an emergency gallery (Not-Stollen) and a boundary gallery (Grenz-Stollen) further east. Initial Wifo plans called for two galleries to be dug parallel, with a single storage gallery to connect the two. In August 1936, the Wifo engineer appointed to direct the project, Karl Wilhelm Neu, proposed a much larger scheme: to deepen the two parallel tunnels enough to create 18 connecting galleries — the tunnels would serve as transport roads, the galleries as the fuel storage rooms. Digging would proceed from two directions, both from the tunnel entrances and from the deep end of the emergency gallery.

Work began in June 1936. Using a workforce of 400 miners, it progressed smoothly, the eastern main gallery (Tunnel A) being shot through on March 13, 1937, and the western one (Tunnel B) on May 5. Lateral galleries were blown through as the tunnels proceeded. All galleries were rectangular, 9 metres wide and 7 metres high. In all, 260,000 cubic metres of stone (780,000 tons of limestone) were removed.

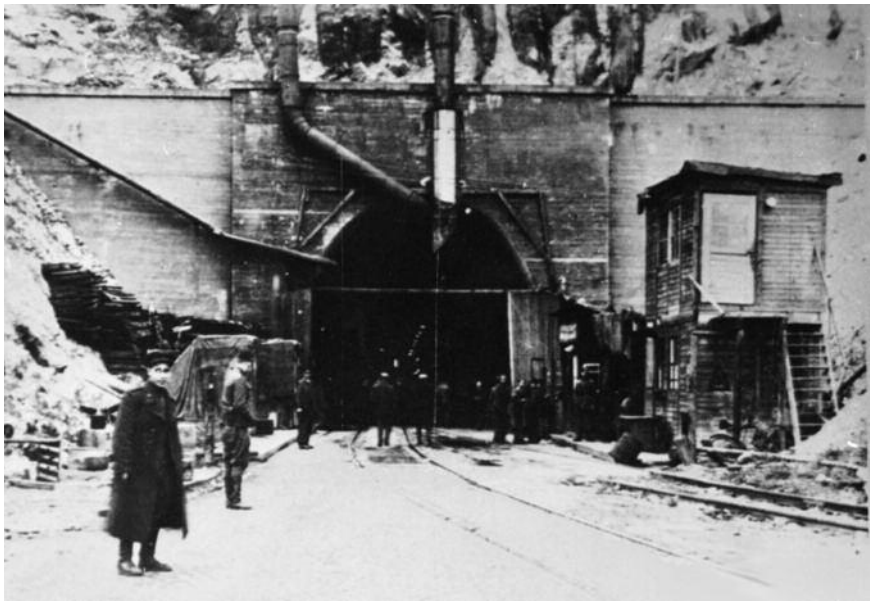
To preclude condensation, it proved necessary to install ventilation equipment. Fresh air from three ventilation shafts was first dried in a six-furnace central heating installed in Gallery 1 before being blown into the tunnels. An air outlet shaft was installed at the deep end. On completion, Galleries 2-18 soon became filled with thousands of oil drums containing the fuel reserve of the Third Reich.

A double-track railway was built into the tunnels to connect the fuel depot with the main rail system. To create office space and housing for its personnel, the Wifo built a small settlement of two office blocks and, by 1943, 20 houses just outside Niedersachswerfen. Another Wifo project at Niedersachswerfen was a cement factory, built in 1940 on the east side of the Kohnstein, between the mountain and the main railway.

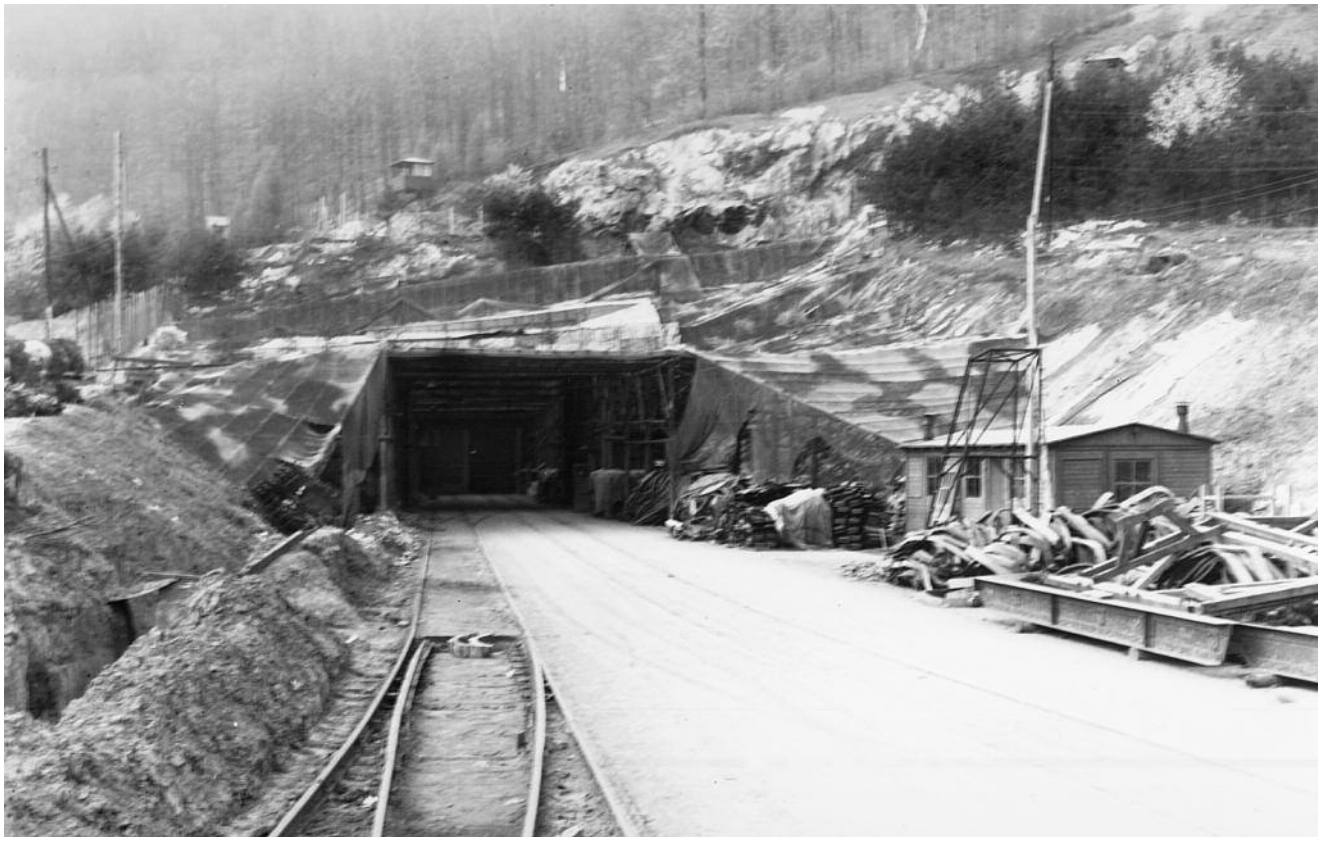
Even before the drum depot (Wifo I) was ready, plans were made to extend the tunnel complex right through to the southern end of the mountain. The two parallel main tunnels, both some 1,800 metres long and running in a soft 'S' form, would have a total of 50 lateral galleries, each between 150-200 metres long.



Above: **Because today the memory of Dora-Mittelbau is kept alive at the southern end of the Kohnstein, people tend to forget that the tunnel complex was initially begun at the northern side. This is the northern entrance to Tunnel A.** *Below:* **Some 200 metres further west lay the entrance to Tunnel B. (GSMD)**



Today, both northern tunnel entrances have completely disappeared under a wall of waste stone dumped here by the Niedersachswerfen gypsum quarry.



The first tunnel to run all the way through the mountain was Tunnel B, and it was only pushed through on August 28, 1943 — just when the Wifo fuel depot was moving out and the Mittelwerk V2 factory moving in. It then became the tunnel where the V2 production line (which ran from north to south) was set up. This is how the southern entrance of B looked at the end of the war. (The railway points in the foreground help to differentiate this tunnel from Tunnel A — compare with plan on page 12-13) Camouflage has been put up to hide the tunnel from observation from the air. The small hut on the right was the sick bay for the slave workers in the early months of the Mittelwerk, at the time when these unfortunates were working (and living) underground and before the camp hospital was ready. Note the watchtowers on the slope above. (USNA)

Instead of the stacks of oil drums in Galleries 2-18, the new galleries would each hold two huge 80-metre-long oil containers, each with a capacity of one million litres. To encompass the tanks, the galleries would be circular, with a diameter of 11 metres.

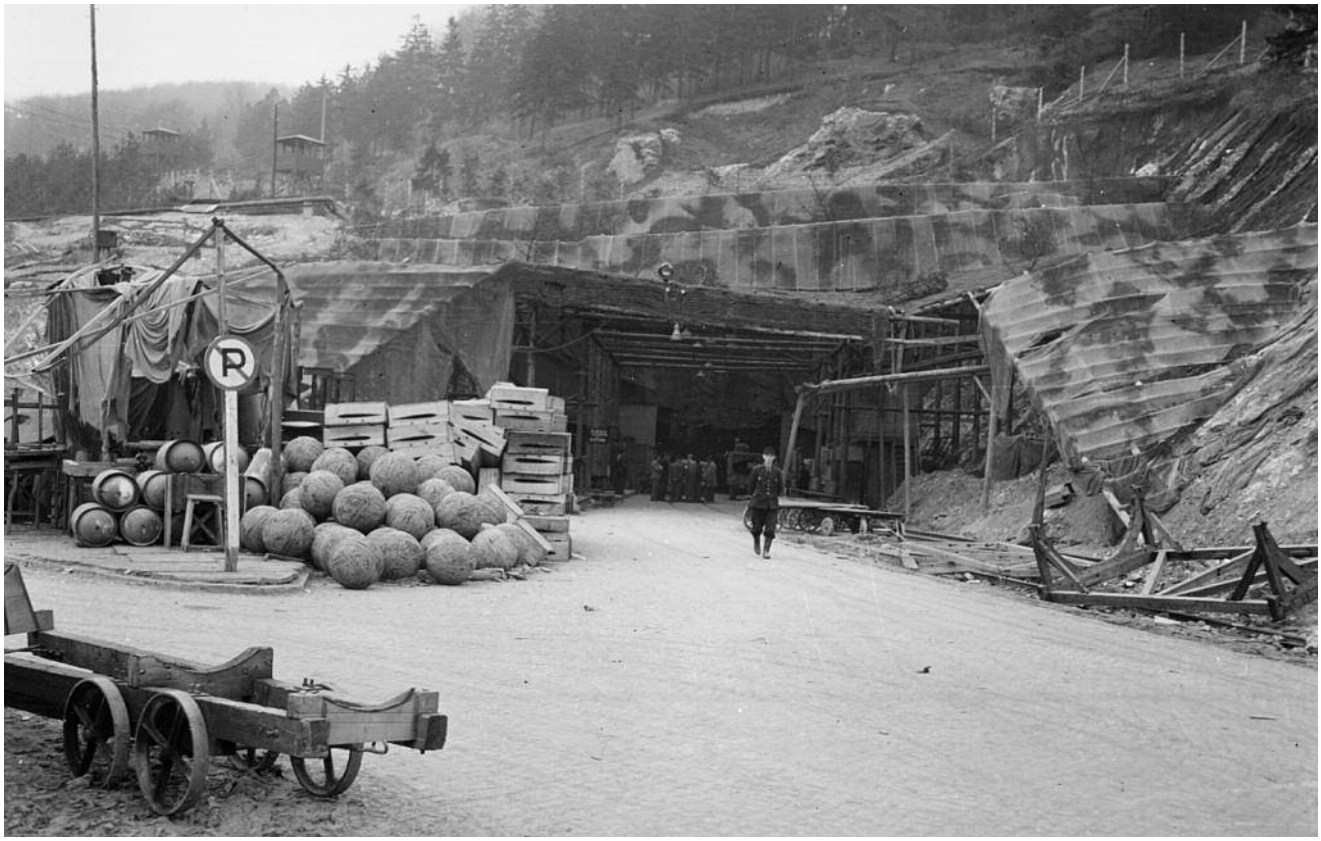
The extension proceeded in two phases, named Wifo II and Wifo III. Wifo II brought the tunnels as far as Gallery 42. Again, digging proceeded from two directions — in the north from the emergency gallery opposite Gallery 17, and in the south from the boundary gallery which hit Tunnel A between the planned Galleries 42 and 43. Tunnel A was blown through on December 8, 1939, and B on May 22, 1940. From Gallery 17 to 42, a third tunnel, running between and parallel with A and B, was built to serve as service gallery for the oil tanks. In all, 700,000 cubic metres of stone (2.1 million tons of lime) were removed.

The final stretch, Wifo III, proved to be the most difficult. The geological composition at the southern end of the Kohnstein made the risk of collapse much greater, and the Wifo had to call in a specialist firm to do the work. Tunnelling could now only proceed using scaffolding and wood lining, and galleries had to be secured with concrete walls. They would have a vaulted profile of 9 metres wide and 6.5 metres high. Because of the risk it was decided to begin with completing one tunnel, Tunnel B, again digging from two sides. It was a slow and dangerous process. Work began in July 1941 and it took two years before the tunnel was finally shot through, on August 28, 1943. Now, Tunnel B ran all the way through the mountain, with entrances on both sides.

By then, Tunnel A had progressed as far as Gallery 45; a southern entrance for it had been begun; the service tunnel running parallel with A and B had advanced as far as Gallery 47; and the eastern half of Galleries 43-45 been completed. Of the 42 galleries, Nos. 2 to 16 contained some 15,000 tons of oil and lubricants in barrels (i.e. over 15 million litres); two huge tanks, each containing one million litre of hydrogen-superoxide, had been installed in Gallery 17. Further into the tunnel, the central part was reserved for war chemicals, the southern part for petrol. Even in its half-finished state, it was the largest fuel depot in Germany, estimated to cover the wartime needs of all three services for two years.

This then was the situation when Paul Figge discovered the Wifo complex in July 1943. (The man who had first told him about it was probably company director Radtke of the Nordhausen steel firm of MABAG; Radtke was a member of the Armaments Committee in Berlin and he knew the Wifo depot because his firm had installed the underframes for the oil drums there.) Soon after, Figge brought Degenkolb and his executive Heinz Kunze to see for themselves. Shortly after, Dornberger also inspected the site. At first, both the Armaments Ministry and the Heereswaffenamt independently

Blown up by the Soviet Army in 1948, this is what the southern entrance to Tunnel B looks like today.



Although its southern entrance was already begun in 1941, Tunnel A was not finally opened all the way through until January 1944, the last 300 or so yards having been dug, under undescribable misery and hardship and virtually with their bare hands, by concentration camp slaves. After August 1944, this end of Tunnel A became the exit for the V1 factory which had been set up in the galleries closest to it, Nos. 43-47. This explains the pile of typical V1 wire-wound compressed-air bottles on the left, and the wooden V1 trolley in the foreground. (USNA)

tried to take over the depot for rocket production, Speer's ministry even going so far as to attempt to completely buy up the Wifo. The Wifo resisted strongly, pointing out the strategic importance of the fuel depot. They enlisted Reichsmarschall Hermann Göring who, in his capacity as President of the Reich Research Council, intervened willingly on their behalf, because he was jealous of the priority which Speer's projects got over those of the Luftwaffe.

However, in late July, Hitler decided that the Wifo was to evacuate the depot and that the tunnel complex be made available for V2 production. A contract was soon negotiated, the Armaments Ministry renting the complex for RM 1 million a month (later lowered to RM 500,000), and taking over equipment and personnel at a fixed price per day.

To organise the move to Nordhausen and set up the production line there, Degenkolb created two new working committees: Transfer (a subordinate of Figge's Deliveries Committee), and Series Production, the latter led by Albin Sawatzki, an engineer from the Henschel works who had proved his worth in series production of the Tiger tank.

That same month, July 1943, Karl Otto Saur, leader of the Technical Department in Speer's ministry and Degenkolb's chief, suddenly and to everyone's consternation announced that instead of Degenkolb's plan to produce 900 V2s a month, the target would be raised to 2,000 a month to be produced at Peenemünde, Friedrichshafen, Wiener-Neustadt and Nordhausen (Saur Programme). In addition, he wanted a monthly production of 20,000 to 25,000 V1 flying bombs (officially known as the Fi 103). All involved judged this plan far too ambitious.

However, this grandiose scheme was soon overtaken by events. On August 13, American bombers severely damaged the Rax works at Wiener-Neustadt (they were to have bombed the nearby Messerschmitt aircraft factories, but hit the more conspicuous Rax buildings instead). Five days later, on the night of August 17/18, the RAF hit Peenemünde. Although neither the V2 development section nor the V2 assembly lines (where series production was planned to start in September) were decisively hit, the raid made clear that the enemy had discovered the secret of Peenemünde. With all three above-ground production sites now bombed, and probably kept under close surveillance by the enemy, the move to underground factories had become a matter of utmost urgency.

On August 19, one day after the Peenemünde raid, Speer reported to Hitler at his Wolfsschanze FHQ to report on the damage done by the raid and discuss plans to move production to Nordhausen. The conferences on this lasted until the 22nd. Himmler and Saur were present and when Speer mentioned that a major handicap was the lack of sufficient labour to set up the underground factory, Himmler saw his chance to really get into the V2 programme. He offered to supply the workforce from concentration camp inmates, and to use them both to get the underground factory ready in minimum time and for series production itself. He guaranteed complete secrecy since the prisoners

Like its twin, Tunnel A was closed by demolition by the Soviets in 1948.

would be completely shut off from all contact with the outside world. Hitler approved.

Efforts between the A4 Special Committee and the SS-Wirtschafts- und Verwaltungshauptamt (SS Main Department for Economic Administration — the authority administering the concentration camps) were quickly coordinated. Degenkolb charged SS-Brigadeführer Hans Kammler, the young and ruthless chief of the WVHA's Amtsgruppe C (Building Construction), with carrying out the order. Already on August 27, just one week after Hitler's decision, the first group of 107 camp inmates was sent from Buchenwald to Nordhausen, followed by a second of 1,223 on September 2.

On September 21, within a month of the FHQ conference, Speer's ministry (newly renamed the Reich Ministry for Armament and War Production), and Kammler formally founded the Mittelwerk GmbH (Central Works Ltd) as the company running the underground factory. Appointed managing director was Dr Kurt Kettler who, like Degenkolb, had made his name in locomotive production.

The contract signed between the Wifo and the Mittelwerk on September 6 stipulated that the actual work, i.e. the completion of the underground facilities, would continue to be directed by the Wifo staff, since they already possessed the technical knowledge and experience for this specialist work, and using the same civil industrial and mining firms. The only change was that the orders would now come from the Mittelwerk GmbH, and that the majority of the workforce would now be composed of concentration camp inmates. The jobs at hand were: completion of the Wifo phase III tunnels; removal of the Wifo dump from the Kohnstein; transformation of the tunnel complex to a production-line factory; construction of road and railway connections; building of a hutted camp for the labour force.

Detailed plans were drawn up listing exact requirements for the factory as regards electrical power, heating, ventilation, supply of water and compressed air; the precise division of the 97,400 square metres of underground floor space and the specific function assigned to each underground gallery; the number of workers needed (planned at 2,000 Germans and 16,000 slave workers).

The actual V2 assembly line, 1,502 metres long, would be set up in Tunnel B, with component parts being produced in workshops installed in the side galleries. Tunnel A would serve as supply street for the workshops and factory, a roadway and a double-track railway traversing the whole length of the tunnel.

Though both were huge operations in every aspect, the transfer to the new location, and the new underground factory itself were to be kept totally secret, and so a large number of code-names, false addresses and nondescript field post numbers were created to conceal the location and purpose of the new factory. The company name 'Mittelwerk' (Central Works) reflected the factory's location in central Germany (there were also plans for a Nordwerk and an Ostwerk), but did not give a clue as to its activities. The company's mail went via a post office box at Halle/Saale, 60 miles distant. 'Mittelraum' was the code-name given to the area around Nordhausen where the company deployed its activities. 'Mittelbau' was the term for the construction projects undertaken in the Mittelraum (in time, it also came to be used as an alternative to Mittelraum, i.e. a geographical designation). 'Dora' was the name for the main camp housing the slave labourers for the Mittelraum projects. In charge of security measures, and also appointed camp commander of 'Dora', was SS-Sturmbannführer Otto Förschner (as of October 5, he was also nominated Mittelwerk managing director on a par with Kettler).

The monastery buildings at Ilfeld, three miles north of the Kohnstein, where both the A4 Special Committee and the Mittelwerk company set up their headquarters.

On August 21, Hitler had stipulated that the three original V2 factories should continue to produce rockets while the underground factory was being built up; the target was to manufacture 900 a month aboveground and 900 underground. Then, in early September, he changed his mind and decided that all 1,800 should be produced at Nordhausen. All personnel and machines of the other factories were to be transferred to Nordhausen forthwith so as to speed up completion of the factory there. However, on October 8, at a conference between the Heereswaffenamt, the A4 Special Committee and the Mittelwerk, the production target was lowered to the much more realistic figure of 900 a month, and this was the figure mentioned in the top-secret formal rocket production order issued by the Oberkommando des Heeres (Army Supreme Command) on October 19. The OKH order commissioned the Mittelwerk to produce a total of 12,000 rockets, with a monthly delivery of 900 at RM 40,000 a piece (total price RM 480 million). By the same order, the Mittelwerk took over all the rights, obligations, and outstanding orders of the factories which had been involved in rocket production until then. (In the autumn of 1944, the Mittelwerk would also formally absorb the Wifo-Aussenstelle.) Although the precise financial details remained to be worked out, this did not hamper the start of production, both because of the project's top priority and because the Armaments Ministry guaranteed payments.

One by one, the various organisations involved moved to the Nordhausen area. First to open office, on September 1, in a hut next to the tunnel entrance, was Sawatzki's Series Production Committee (Sawatzki was nominated the Mittelwerk's Technical Director). Other committees found space in requisitioned inns and cafes in Niedersachswerfen and Wernigerode. The Mittelwerk commercial section took over the offices of the Wifo housing settlement. The former monastery complex at Ilfeld, just three miles to the north, which since 1940 had housed the Napola (National Socialist Cadre School) Ilfeld, was taken over to become the Mittelwerk company headquarters and seat of the A4 Special Committee. The huge complex also served as billets and reception centre for German civilian personnel. (In early 1944, the Special Committee would move to Rübeland in the central Harz, the commercial section moving to take over its offices at Ilfeld.)

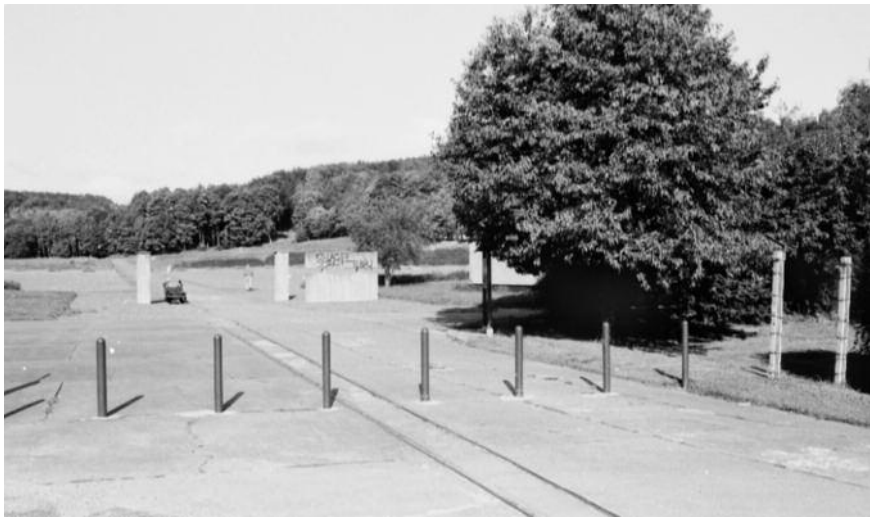
However, little care was given to accommodating the slave labourers. As long as the hutted camp was not yet ready, they were to live in the underground complex itself, deep inside the mountain — which meant that those inmates assigned to work in the tunnels would not get to see any daylight at all, and this sometimes for weeks on end. At first, the prisoners were assigned to Gallery 39, a room covering an area of 1,800 square metres. All they were given were a few carbide lamps, latrine buckets, and straw and blankets to sleep on. From October, a prisoner carpentry squad was ordered to build multi-storied wooden bunks in the newly-shot-through Galleries 43 to 46. With some 6,000 prisoners cramped into them, these four rooms — 120 metres long by 12 metres wide and 9 metres high; dark, damp, cold, and separated from the main tunnels by wooden and canvas walls — became a veritable hell on earth. Even with men from night and day shifts alternating a bunk, there was not nearly enough space for everyone. The three- and four-storied bunks could hardly carry the weight and sometimes collapsed, killing many inmates. The only lighting came from weak lamps hung widely apart. Beyond Gallery 18 no ventilation, water or heating had yet been installed, and the atmosphere in the galleries was decidedly unhealthy. Every explosion set off by the tunnellers at work almost next door filled the whole rooms with a blinding, suffocating dust. Sanitation was catastrophic. The prisoners had to use improvised latrines, made up of halved oil drums with a plank on top. Set up in Tunnel A in alcoves opposite the galleries, they filled the deeper tunnels with a terrible stench and were a source of deadly infections. Every evening, a prisoner squad had to load the barrels on train wagons and empty them outside. There was no washing or drinking water, and prisoners quenched their thirst with moist on the walls or water lapped up from mud; some used urine to wash the dust off their bodies. As food, the prisoners only received Ersatz coffee and bread, with an occasional slice of sausage or margarine added to it, in the morning and thin soup in the afternoon and evening. Dysentery, tuberculosis and other diseases ran rampant.

The work itself was exhausting and dangerous. Driven on by SS guards and Kapos (prisoners with authority over fellow inmates), constantly beaten and kicked, many were soon reduced to living wrecks. Some went mad. Most work was done

Another part dug by the slave prisoners was Gallery 46 or, to be more exact, the eastern half of it (the western half was never begun). This was one of the four galleries (Nos. 43-46) used, between October 1943 and June 1944, as living quarters for the prisoners — where thousands squatted in semi-darkness in overcrowded, four-tiered bunks which reached as high as the ceiling, and scenes of unimaginable suffering and dying took place. Later, Gallery 46 became one the five where V1 series production took place. Today, it is one of those that can be viewed by visitors of the Mittelbau-Dora Memorial.

manually. Even the rocks broken loose by blasting were removed by hand. Mining accidents were frequent.

In 12-hour shifts, the slave workers, overseen by civilian engineers, worked on many different jobs: pushing through Tunnel A and galleries beyond No. 42; levelling the circular galleries 25-42 with debris; pouring concrete; drilling ventilation shafts; removing the oil barrels and dismantling the giant oil tanks; laying train tracks; installing electric wiring, pipe systems, transformer stations, water pumps, and machinery; camouflaging the tunnel entrances and creating phoney rail complexes for deception at both mountain sides; building office huts at the site, and billet huts at Ilfeld and Harzungen (40 huts in all); and a thousand other jobs.



Right: **Simultaneously with the work on the tunnels, the slave workers had to build their own concentration camp on the southern slopes of the Kohnstein. Named 'Dora', it was originally a subcamp of Buchenwald, but in October 1944 it became an independent main camp. 'Dora' was the last of the large concentration camps created by Nazi Germany. The early camps built in the 1930s, like Dachau, Buchenwald (see *After the Battle* Nos. 27 and 93) or Sachsenhausen, were all given big, stone gate-buildings, all of similar design and meant to impress both inmates and public opinion. However, by 1943, the SS no longer bothered about these, and camps like Belsen (see *After the Battle* No. 89) and 'Dora' were built without one. Moreover, 'Dora' was a totally secret camp, not meant to be seen by anyone not involved in the Mittelwerk project, so there was no need for an imposing gatehouse. Its entrance was merely flanked by two wooden huts, the one seen here (Block 29) housing the Gestapo section, and the one opposite (Block 1) the SS camp administration. (GSMD)** *Below right:* **Today, only the rail track — which connected the camp with the nearby goods-train station — remains.**

Above: **The camp as seen from the southern slope of the valley in which it lay. The two gate huts seen in the previous picture are on the far right, with the Appellplatz (roll-call square) adjoining them, and the various camp blocks stretching out to the left. The low building visible in the right foreground is the camp prison. The crematorium can be seen hidden in the woods on the far slope on the left. (GSMD)** *Below:* **The same panorama today.** *Right:* **After the war, the camp was virtually razed to the ground, stone buildings being demolished and wooden huts being removed. In GDR times, only the central part of the camp — the open space from the Appellplatz to the coal shed (Block 19) — was made into a memorial site, the rest being made inaccessible to visitors. Of the foundations that were thus left to be seen, the largest was that of the U-shaped camp kitchen (Block 10).**

In addition, the slave labourers built their own concentration camp. Located less than a kilometre from the southern exit of Tunnel B on the sloping edge of a valley, in its final form it comprised 56 living huts, 3 administrative huts, 12 economic huts, 2 bath houses, a hospital area of 10 huts, a crematorium and a prison block ('the bunker'); improvements in the summer of 1944 included a water cistern, canteen, cinema, sports ground, and even for a while a prisoners' bordello, the latter frequented mainly by Kapos and foremen. The entire compound was surrounded by an electrified wire fence and 18 guard towers. The SS compound of 25 buildings included a Kommandantur and administrative block, 6 barrack blocks for 900 guards, 5 living blocks for SS personnel, 4 economic blocks, a hospital, horse stable, garage, canteen, and a bordello.

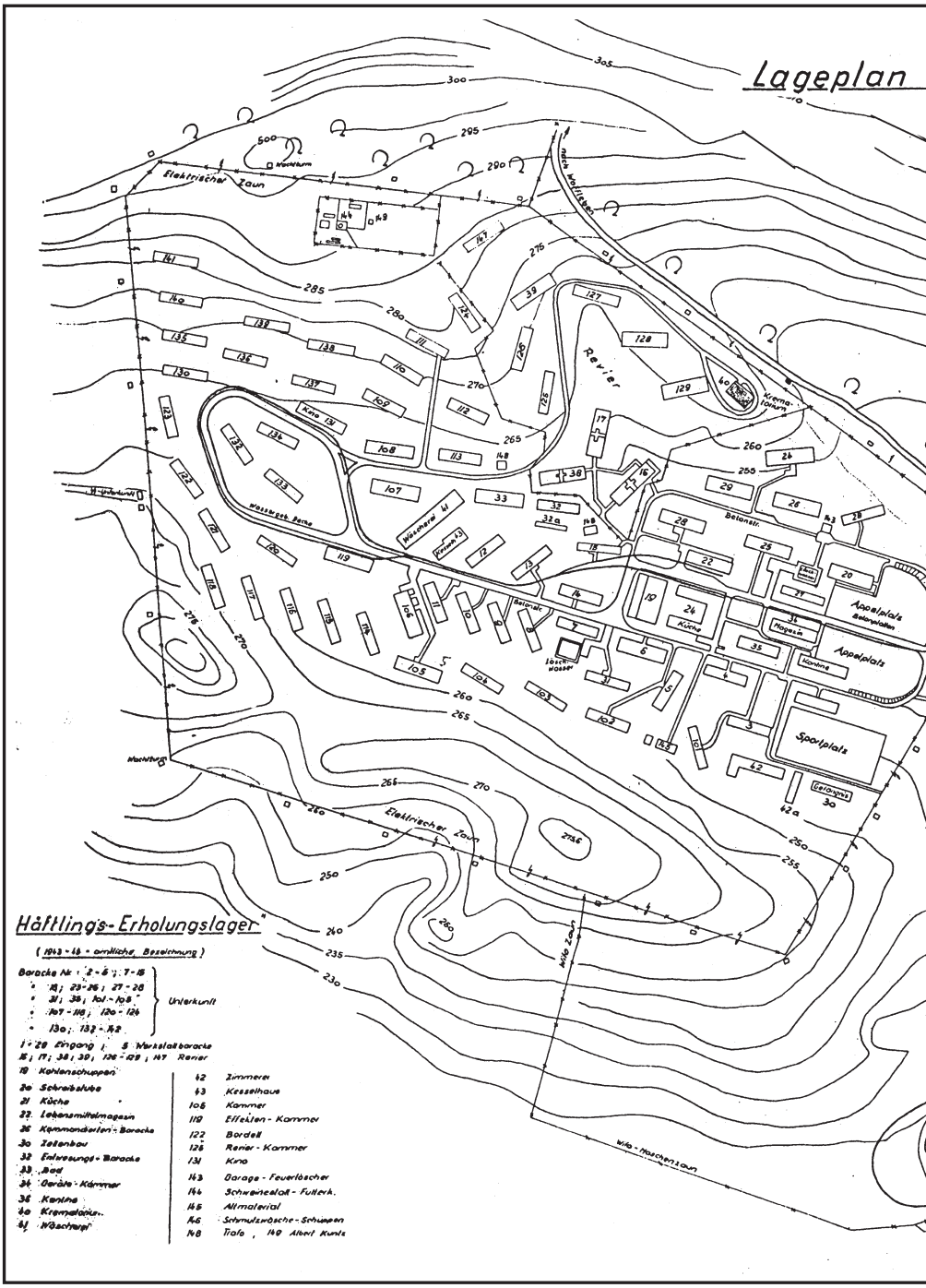
Also open to inspection in GDR times was one of the two water reservoirs.

However, hidden under the trees and gradually disappearing under the undergrowth, remained the foundations of all the other buildings. Now, with the demise of the GDR, the Memorial staff have been able to change this too. Since 1991, with the help of youth volunteer camps, one by one the remains of huts and buildings are being excavated and laid bare again. This is the camp laundry (Block 41).

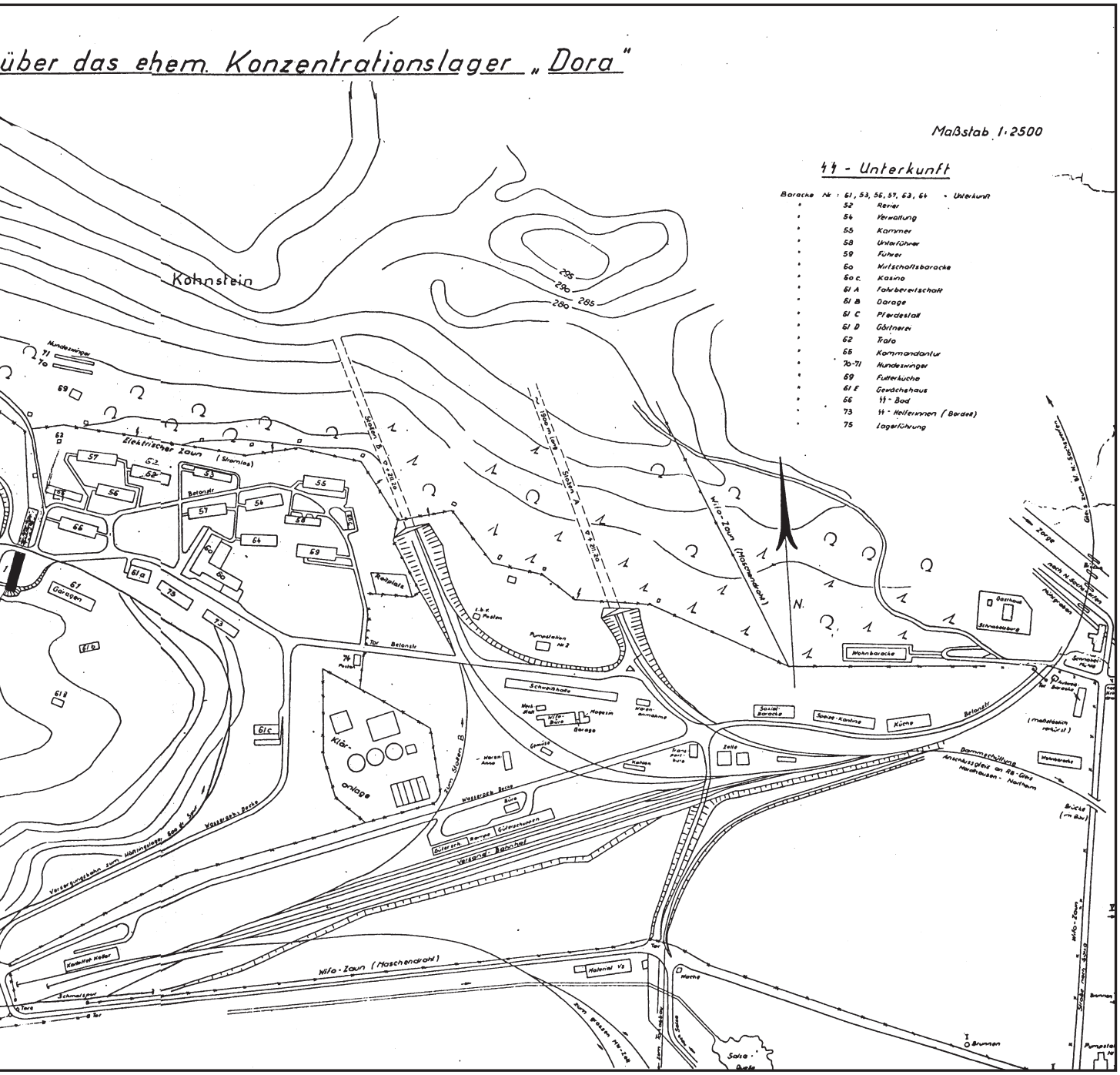
The delousing station (Block 32). During a delousing action, prisoners had to hand in their clothes and wait outside naked, in all weathers, while these were being disinfected. If that was not bad enough, their garments would be returned still wet from the cleaning, making the risk of catching a cold or pneumonia even greater. Delousing was ineffective anyway, because inmates from disinfected huts worked together with occupants of huts which had not yet been treated.

Lay-out of the camp and the adjoining SS compound as it was in its final form in 1945 (Tunnels B and A are on the right). (GSMD)

Prisoners' Camp	
Living huts	Blocks 2-4, 7-15, 18, 23-25, 27-28, 31, 35, 101-105, 107-118, 120-124, 130, 132-142
Hospital	Blocks 16-17, 38-39, 125-129, 147
Camp administration	Block 1
Gestapo office	Block 29
Statistics office	Block 20
Workshops	Block 5
Coal shed	Block 19
Kitchen	Block 21
Tool shed	Block 22
Bordello	Block 26
Prison	Block 30
Delousing station	Block 32
Baths	Block 33
Storehouse	Block 34
Canteen	Block 36
Crematorium	Block 40
Laundry	Block 41
Carpenter's workshop	Block 42
Metal workshop	Block 42a
Boiler-house	Block 43
Clothes storage	Block 106
Storage	Block 119
Cinema	Block 131
Fire-brigade	Block 143
Pigsty/Fodder store	Block 144
Re-usable materials	Block 145
Dirty laundry shed	Block 146
Transformer-station	Block 148
SS Camp	
Kommandantur	Block 65
Camp command	Block 75
Administration	Block 54
Officers' quarters	Block 59
NCOs' quarters	Block 58
Other ranks' quarters	Blocks 51, 53, 56-57, 63-64
Sick-bay	Block 52
Clothes storage	Block 55
Storehouse	Block 60a-60b
Mess	Block 60c
Drivers	Block 61a
Garages	Block 61b
Stables	Block 61c
Gardener	Block 61d
Greenhouse	Block 61e
Transformer-station	Block 62
Baths	Block 66
Kitchen	Block 69
Guard dogs	Blocks 70-71
Bordello	Block 73



Left: **Block 119, the Effektenkammer (storage building). On arrival at 'Dora', prisoners had to hand in all their personal possessions which were then stored here. However, most inmates had been at Buchenwald before and already been robbed clean there, so the majority arrived with very little of their own. Prisoners assigned to the Effektenkammer-Kommando had therefore relatively little to do, and were thus considered lucky.** *Right:* **Block 125, one of the camp's ten hospital huts (and one of the few camp huts with a basement). Originally, Dora's Krankenrevier (sick-bay area) was small but, as the number of sick and injured inmates rose, it expanded, eventually encompassing a special section of ten huts, separated from the rest of the camp by a barbed-wire fence. Since the SS, for fear of contagious diseases, tended to avoid the hospital area, it was able to become a centre of the prisoners' resistance organisation.**



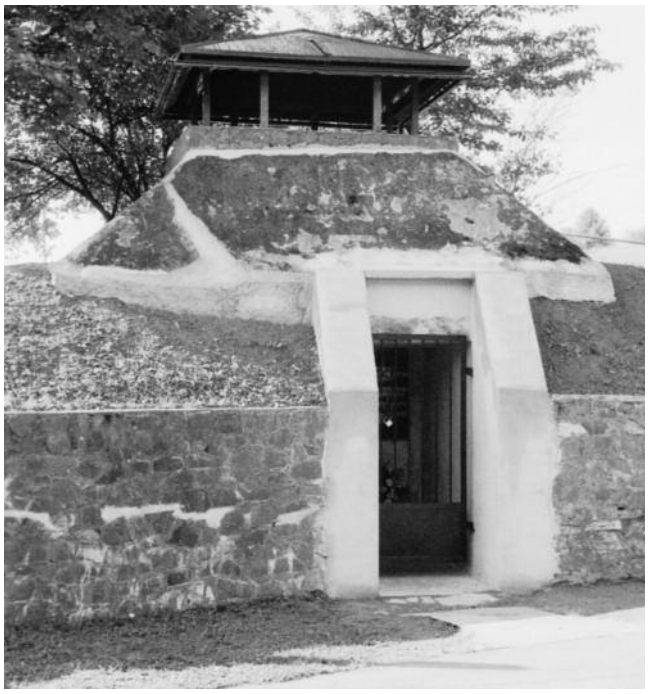
Baracke Nr.	Unterkunft
52	Revier
54	Verwaltung
55	Kammer
58	Unterführer
59	Führer
60	Wirtschaftsbaracke
60 c	Kasino
61 A	Fahrbereitschaft
61 B	Garage
61 C	Pferdestall
61 D	Gärtnerei
62	Trafo
65	Kommandantur
70-71	Hundezwinger
69	Futterküche
61 E	Gewächshaus
66	SS - Bad
73	SS - Helferinnen (Bordell)
75	Lagerführung

Each unearthed foundation is now marked with a mirror plaque giving the block number.

Left: **Block 131, the camp cinema. Built in the summer of 1944, it had 200 seats. At a ticket price of 30 Pfennig, prisoners could watch selected movies and newsreels here. However, from January 1945, the building was used to house prisoners evacuated from other camps, up to 1,200 being crammed into it.** *Right:* **The camp's second water cistern.**

Above: **In this picture, taken in 1946 (when the camp housed German refugees), the same reservoir can be seen in the lower right corner. The huts in the foreground are Blocks 7 and 8, with 13 in the middle distance, and 32 (the delousing block) and 33 (the bath-house) above that. Each prisoners' block divided into a sleeping compartment with a number of two-tiered bunks and an eating compartment with tables and stools. The huts were well supplied with heating appliances and sanitary facilities with running water. (GSMD)** *Right:* **Today, there is again a wartime hut on the grounds of the 'Dora' Memorial. This particular specimen was in fact constructed from the best-preserved parts of three original huts found surviving in different places in the region around Nordhausen (where they had been taken and used for various purposes after the war). Rebuilt in 1995 on one of the valley terraces, on the site of the former Block 28, it now houses the Memorial's new exhibition.**

Left: **The camp prison (Block 30), also known as 'the Bunker'. A stone building in a remote corner of the camp (note the wall hiding it from view), it contained some 30 cells of 2½ square metres each, in which sometimes up to 16 prisoners were confined at a time; an interrogation room, where prisoners were beaten up and tortured; and a cellar which the camp SS used as an air-raid shelter. The large building in the background is Block 42a, the metal-workshop. (GSDM)** *Right:* **The remains of the prison, laid bare with the help of youth volunteers from various school educational projects in 1997.**



Left: **During the time when 'Dora' was a GDR memorial, the only other intact building, apart from the crematorium, said to be original was this concrete structure located in the south-east corner of the camp. For years it was known as the 'Steh-bunker' (standing bunker), purportedly a one-man prison cell used for isolation punishment. However, since its use is not mentioned in any of the survivor accounts and because of its heavy construction, the present-day memorial staff think it more likely that it is in fact a guard-tower with an air-raid shelter below. And since it is not marked on any of the original camp plans, they now assume it is a post-war reconstruction.** *Right:* **The entire camp complex was surrounded by a double electrified fence guarded by watchtowers at regular intervals. Though difficult to match today because of the dense tree growth there, this is almost certainly the part closing off the valley at the western end. (GSMD)**

The number of prisoners sent from Buchenwald rose rapidly: by the end of September there were 3,000, one month later 6,000, by the end of the year 10,000 — mostly Russians, Poles and Frenchmen, with smaller groups of Germans, Belgians, Italian military internees, Dutchmen and nearly three dozen other nationalities. By December 31, only 5,500 of these were living in the open-air hutted camp, the others were still in the deadly tunnels. Gradually, as the camp was enlarged, the others were transferred to it as well, finally regaining the light of day and fresh air. The last unfortunates did not come out until June 1944.

However, there is one other original building still standing, an unobtrusive small structure overlooked by most visitors. This is Block 145, the Altmaterial-lager (storage building for re-usable materials), down a path off the southern camp road.

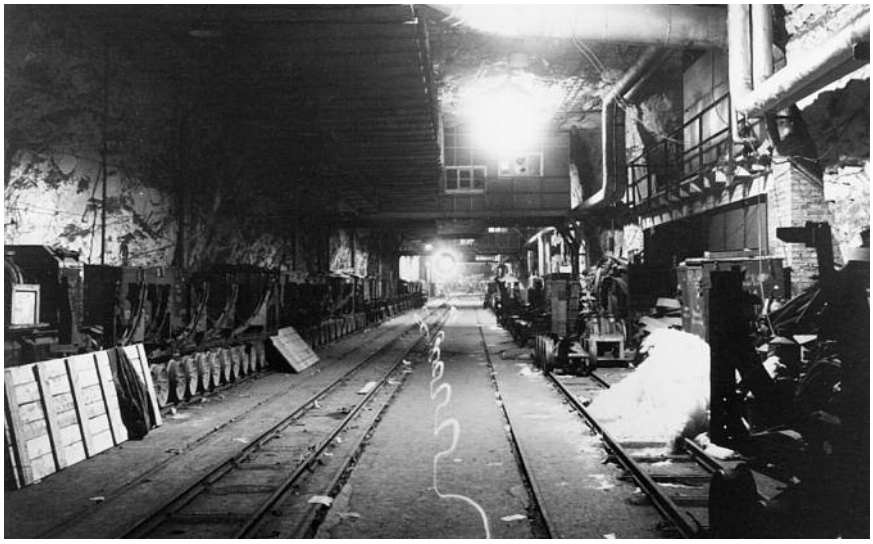
Above: **The camp crematorium. Initially, prisoners who had died at 'Dora' were sent back to Buchenwald to be cremated there but, as the number of dead grew, it was decided to build a crematorium on site. Built up on the slope of the Kohnstein, under the trees and somewhat isolated from the rest of the camp, it was taken into use on March 30, 1944. A loop road through the sick-bay area led up to it (see the plan on pages 12-13). (GSMD)** *Right:* **About the only building not pulled down after the war, the crematorium became the centre of the memorial site in GDR times, an exhibition being set up inside and many wreath-laying ceremonies taking place outside. However, with a new flight of steps having been laid out leading up to it, most visitors to the memorial were unaware that they were in fact entering the crematorium through the back doors. What is today the building's rear, was originally its front.** *Top right:* **Another legacy of GDR times: the sculpture of five 'Dora' slave labourers by Jürgen von Woisky, dedicated in 1964.**

Owing to their bad accommodation, starvation, hard work and maltreatment, the death rate among the slave workers was appalling. Of some 17,500 inmates that had been sent to 'Dora' by April 1944, some 3,000 had perished. Their emaciated corpses were sent back to Buchenwald to be cremated. (This became unnecessary when 'Dora' opened its own crematorium on March 30, 1944.) Another 3,000 prisoners which had become too disabled or sick to be of any use were shipped off to other camps: 1,000 each to Maidanek on January 15 and February 8, and another 1,000 to Bergen-Belsen on April 8 (see *After the Battle* No. 89).

Left: **The mortuary in the crematorium, as found by the Americans in April 1945. (GSMD)** *Right:* **To create space for their exhibition, the GDR authorities pulled down the dividing wall between the mortuary (on the left) and the adjoining room.**

The crematorium had two ovens of a standard type seen in other concentration camps too (e.g. Dachau and Bergen-Belsen — see *After the Battle* Nos. 27 and 89). This picture was taken on April 14, 1945, after the camp's liberation by American forces. A freed Polish inmate shows one of the ovens to Tech/5 John L. Lyndon of the US VII Corps. (USNA)

Simultaneously with the construction of the slave labour camp, the underground tunnels were being converted into a production-line factory for V2s. The ladder-like plan of the complex was ideal for series production: goods trains would bring in raw materials via Tunnel A and supply the workshops in the side galleries, which in turn would supply components and sub-assemblies to the assembly line in Tunnel B, the V2 being built up as it passed along the galleries towards the southern exit. *Right:* **This is Tunnel B at the beginning of the V2 production line (which at the end of the war, when this picture was taken, began at Gallery 21, the stretch from 1 to 20 having been handed over to jet fighter engine production). Though Tunnel B had two standard-gauge railway tracks running through it, the special trolleys of the V2 assembly line ran on narrow-gauge tracks. In fact, the trolley line on the left is here partly covering one of the normal-width tracks. (BA)**

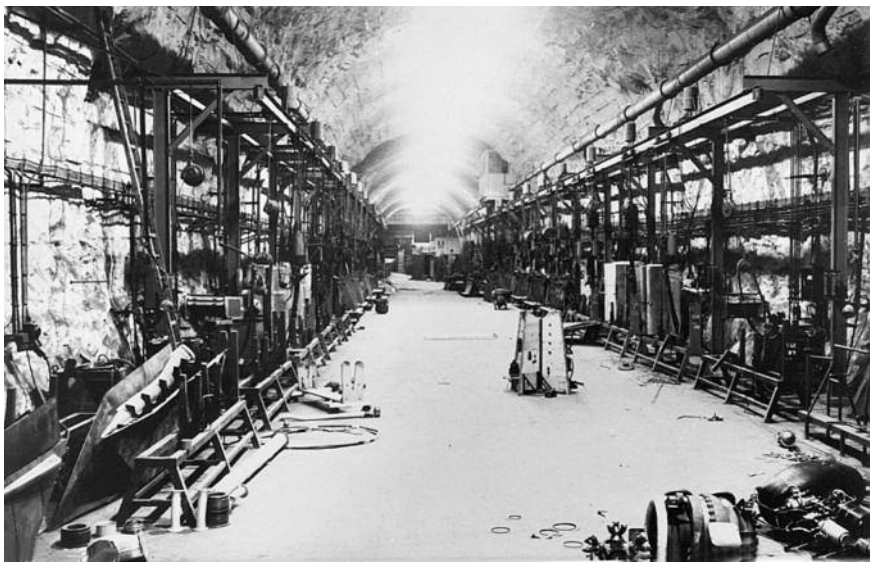


Meanwhile, the underground factory was rapidly taking shape. Tunnel A would soon reach its southern exit. Four more galleries, 43 to 46, had been shot through (Nos. 47 to 50 were never completed). In all, the slave labourers removed 125,000 cubic metres of stone, adding 12,600 square metres of floor to the existing 98,000. Every day, dozens of trains arrived bringing tons of building materials, tools and equipment. Starting on September 19, special trains carried the machines, equipment and personnel from the three V2 factory sites to Nordhausen.

On October 30, to ensure deliveries by the sub-contractors, Degenkolb created a special Führungsstab (Head Staff) under Hauptmann Dr Kühle, which had representatives with plenipotentiary powers at each of the major supplying firms. In December, this Führungsstab became even more important when it was given responsibility for the whole V2 contract.

On December 10, 1943, Speer, accompanied by Kammler and Degenkolb, came to Nordhausen for a personal inspection of the complex. He was impressed by the magnitude and speed of the whole project, but seems not to have been unduly moved by the misery of the slave workers, only worried lest they might lose too much of their effectiveness.

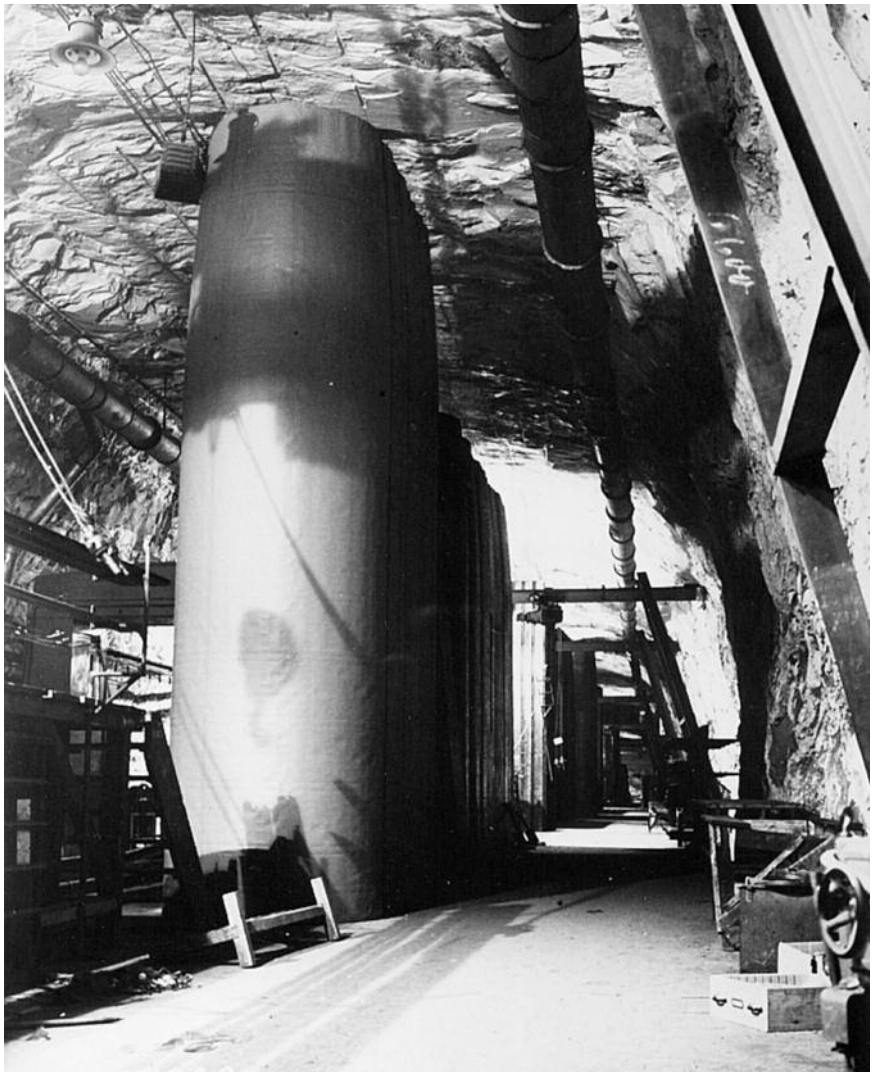
By now, the factory was ready to start tentative production. From early December, when the machines had been installed, all the prisoners, except for those building the camp outside, were employed at assembling rockets. The first three V2s rolled off the assembly line in Tunnel B on January 1, 1944. However, on arrival at Peenemünde, these three, Nos. 17001-17003, proved to have so many production faults that they could not be test-fired. When No. 17003 was finally launched on January 27, it failed and



Without proper captioning, identification of individual galleries within the Kohnstein mountain is not easy. Often, it is only from such clues as the type of V-weapon or components visible, the sort of machinery, the tunnel form, the height of the ceiling, the presence of railway tracks and other such details that one can determine which gallery one is in fact looking at. In this picture there are several clues. On the left is a jig for welding V2 fins; on the right lie a V2 turbo pump and a V2 hydrogen-peroxide ('T-Stoff') container, the latter complete with compressed-air bottles. Such components were made in Galleries 16-18 and 20-21. The circular ceiling indicates that it must be a gallery beyond No. 18 — so this could be either 20 (production of turbo pumps) or 21 (production of V2 parts). (BA)

One of the circular-type galleries as it looks today, pictured by American photographer Alvin Gilens. In 1994, Gilens extensively photographed the whole tunnel complex, the result of which was a photo exhibition and a photo book titled *Discovery and Despair. Dimensions of Dora,* published in 1995. When we visited the tunnel complex in September 1997, we could not get in as deep as we would have wished, owing to the fact that the Niedersachswerfen gypsum factory, who own the Kohnstein mountain, are now no longer prepared to accept the legal risk of outside visitors entering unsecured parts of the tunnels. We are therefore very pleased that Mr Gilens has agreed to let us use his photographs to illustrate the parts we could not visit. (Gilens)

Right: **At the start of the production line, in Galleries 23 or 24, were stored the big 6.15-metre-long half-sections of the V2 fuselage's middle part. In upright position, they almost touched the ceiling, and this probably explains why this picture has been captioned in some publications as showing 'concrete support pillars'! (BA)**



exploded. Further test launches at the new, SS-controlled, rocket test site 'Heidelager' near Blizna (see *After the Battle* No. 85, pages 12-13) were equally disappointing, most of them exploding in the air or at the start, and only 10 to 20 per cent hitting the target area.

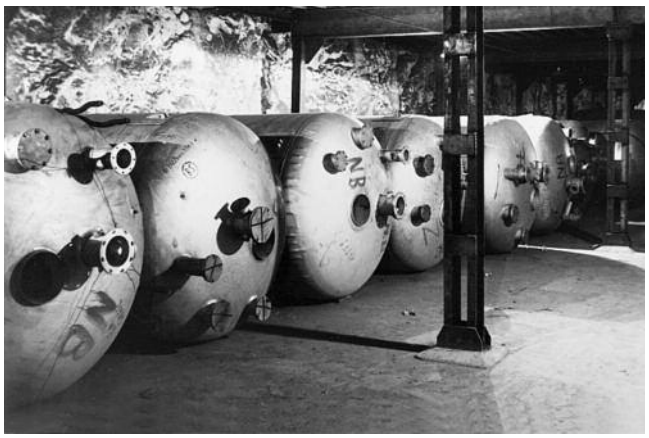
The many failures were caused both by the immense technical complexity of the rocket missile itself (a V2 consisted of 20,000 different components), and by the many possibilities for sabotage by the forced labourers. Measures to improve production quality were quickly taken. Countless directives and improvement proposals were sent from Peenemünde to Nordhausen (Von Braun himself visiting the factory on January 25). Simplifications found during production were introduced. Technically-trained prisoners were put in charge of and forced to oversee the work of fellow-inmates. Anti-sabotage measures were increased. Any negligence was now regarded as sabotage, and could lead to incarceration in the 'bunker' or death by hanging. One day (probably in March 1945), the guards hanged some 50 inmates in Gallery 41, tying a dozen at a time to a beam which was then pulled up by an electrical crane, and forcing the other prisoners to watch. To uncover resistance and sabotage groups, the Germans made extensive use of informers, both planted spies and prisoners betraying their fellow-inmates.

In the first month of production, January 1944, only 50 missiles were completed, i.e less than two per day, but thereafter these figures rose steadily: 86 in February, 170 in March, 253 in April, 437 in May. Gradually, the rocket was improved. For example, the introduction in May of glass-wool insulation between the rocket's fuel container and the sheet-steel outer skin (which would get very hot from friction during flight) lessened premature explosions by half. Reinforcing the missile's nose with an inner skin further reduced failures.

The V2s produced at Nordhausen were delivered without warheads and, initially, also without electrical systems. Well-camouflaged, the finished missiles were transported by train to the Demag vehicle works at Falkensee near Berlin, which installed the wiring, and from there to one of the Army Ammunition Establishments to receive the explosive warhead. From May, the installation of the electrical equipment was done in the Mittelwerk itself. For this, a special dust-free workshop had been built in the one of the underground galleries. Another special gallery was No 41: its floor had been deepened by an extra 50 feet so that rockets could be set upright for final testing and checking. An especially-dangerous place in the assembly line was the galvanising shop in Gallery 39; prisoners assigned here were inexorably poisoned by the build-up of toxic fumes, the average life expectancy here being just one month.

April-May 1944 marked the end of the first phase of the 'Dora-Mittelbau' complex, with several changes both in the camp, the underground factory and the company organisation.

With all prisoners now housed above-ground in 'Dora' and the camp facilities gradually being improved, life for the inmates had become a little more bearable — although of course the hard work and



Left: **This is either Gallery 25 or 26 — both were used to store the V2's mid-section fuel tanks, the ones in this picture being 'A-Stoff' (liquid-oxygen) containers. The V2's other main tank held a mixture of alcohol and water ('B-stoff'). Delivered from elsewhere, these tanks were only given a pressure test before assembly into the V2. Note that this room has a second storey built in — a concrete floor standing on iron supports. This is a construction seen in many of the galleries. (BA)** *Right:* **Remains of a double storey survive in the underground darkness, this particular one being pictured in Gallery 45.**

This is without doubt Gallery 29, the assembly line for the V2 combustion chamber. The view is from Tunnel A towards Tunnel B. Gallery 29 was one of those galleries which had been excavated deeper, to below ground-water level, so pumps had to be installed to keep them dry.

brutal treatment kept the toll in human lives high.

Also in April, the rapid growth of the Mittelwerk firm necessitated a revision of its internal organisation. Georg Rickhey, a Demag company director from the Ruhr area, was appointed General Managing Director, above all the other directors, and the various departments differently organised. (The new position had earlier been offered to Degenkolb and to Figge, but both men had refused.) The reorganisation was not welcomed by all managers, and many judged Rickhey a failure and a loose-liver.

In the A4 Special Committee, there were changes too. About March, Director Degenkolb was relieved of his post and given a new task with the Reichsbahn. His old position was left vacant, Kunze and Figge taking over their chief's duties. In fact, the committee and its various sub-committees had achieved most of their tasks, and in due course most of them were reorganised or assigned to other jobs.

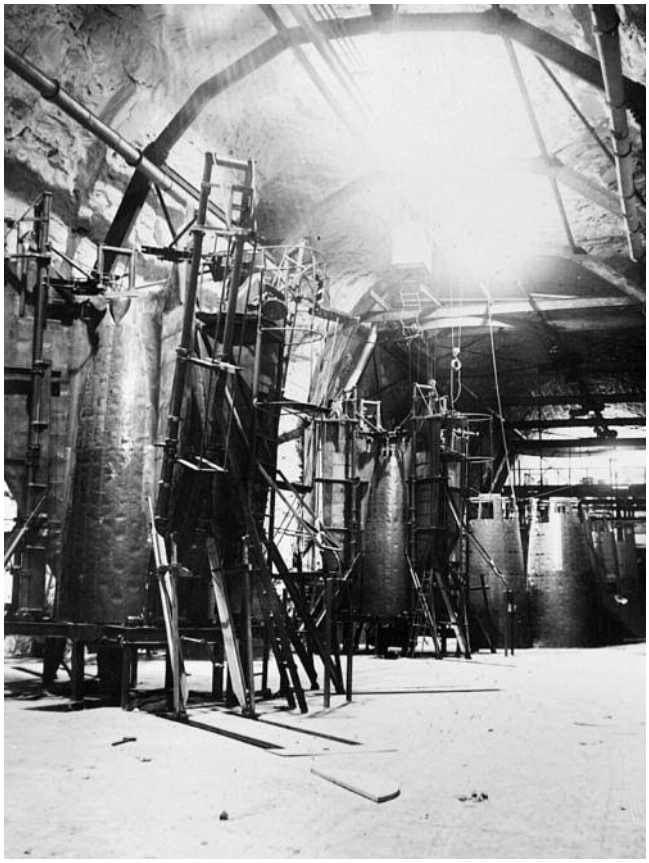
But perhaps the major change was that from April the Mittelwerk no longer had exclusive use of the underground factory or the Mittelbau area.

While the V2 scientists had successfully lobbied for priority and acquired the Nordhausen complex for its production lines, other German war industries, notably the aircraft industry, were also looking to get their factories underground. In early March 1944, faced with the increasing enemy attacks on aircraft factories and catastrophic bomber raids on German cities, Armaments Minister Speer and Generalfeldmarschall Erhard Milch, deputy chief of the Reich Air Ministry, jointly created the so-called Jägerstab (Fighter Staff) as a special agency to

Right: **An incredible sight after half a century: V2 motors lying about in a flooded Gallery 29. Another picture courtesy of Alvin Gilens.** *Below:* **More V2 combustion units awaiting assembly into the rocket. The rail track shows that this is one of the main tunnels, probably off Gallery 29, and the absence of an assembly line suggests that it is Tunnel A rather than B. (BA)**

Gallery 29 can today only be reached using a dinghy, but the long haul through complete darkness produces eerie comparisons indeed. (Alvin Gilens)

Metal-press workshops were in both Gallery 32 and 33. The huge Weingarten hydraulic press in the foreground was 6½ metres high. Both gallleries are today flooded, but divers have recently identified the presses' foundations. (BA)



V2 tail units were assembled in Gallery 37. These are welding jigs for fitting the fins to the tail fuselage. With fins attached, the tail section stood nearly four metres (13 feet). The crooked roof beams are typical of the Wifo II galleries (Nos. 19-42).

organise the upkeep of fighter production. Appointed executive chief of the Jägerstab was Karl Otto Saur, who soon not only streamlined fighter production but also successfully campaigned for more underground facilities for aircraft factories. At a Führer conference on March 5, Hitler decreed the transfer of the whole aircraft industry to bomb-proof factories.

Criticism, notably from Luftwaffe circles, that the Army's V2 programme was taking up inordinate amounts of manpower, resources and underground factory space (at the expense of, for example, fighter production and the Luftwaffe's V1 flying bomb project) seems not have been without effect on Hitler. At the March 5 conference, he had demanded a comparative inquiry to see whether the Mittelwerk resources and underground floor space could not better be allocated to aircraft production. As a result, Hitler decreed that part of the Nordhausen underground factory was to be used for the production of jet fighter parts. In April, the

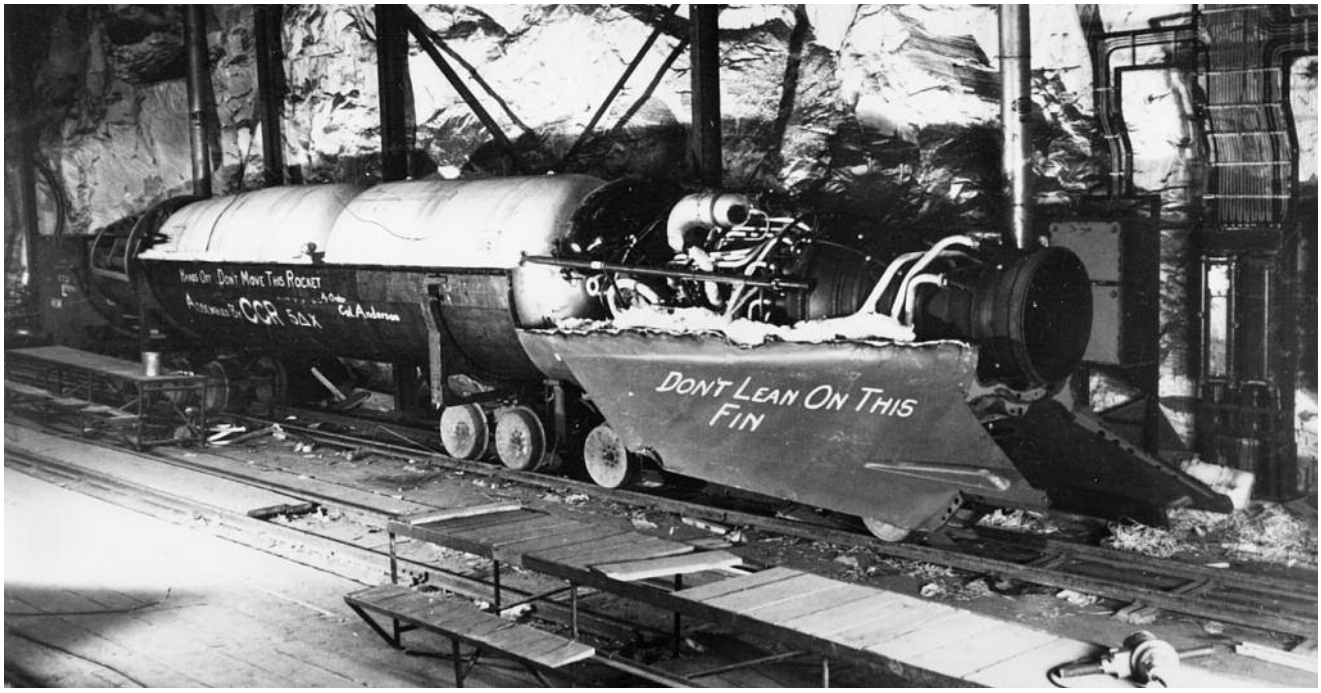
Right: **Gallery 39 housed the 'Spritzerei', the dope-chamber where the V2 fuselage parts were galvanised and painted. This was one of most deadly galleries to work in, the toxic fumes from the varnish slowly poisoning those in the room. Workers assigned to this job would on average survive for a mere four weeks. Though the original caption to this picture described it as showing the dope-chamber, it cannot be the one in No. 39, since the configuration of that gallery is quite different and space there too confined for V2 tails to be set up like this. Probably this is an annexe to the main galvanising shop, perhaps in the adjoining Gallery 38. There is no means to check this, as No. 38 was completely blown up in 1945. (BA)**

By the time the assembly line in Tunnel B reached this point, the rocket on the trolley was nearing completion. This picture, taken by the Americans after they captured the factory in April 1945, shows one that is complete except for its tail unit. Note the planking on the floor covering a stretch of the standard-gauge rail track. (IWM)

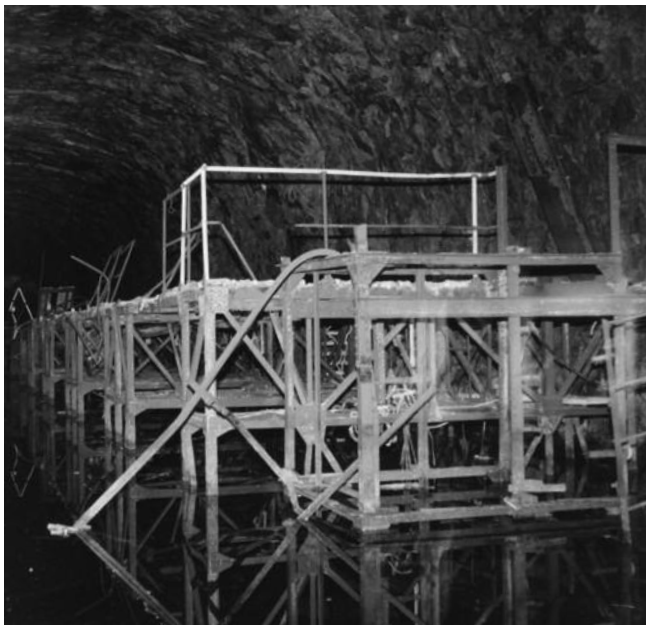
Mittelwerk had to hand over the northern part of the complex, Galleries 1-20 (the former Wifo I), to the Junkers company, moving its own V2 factory to the remaining galleries 21-46. Transferring its aircraft engine factories at Magdeburg, Köthen and Leipzig, Junkers installed an assembly line for jet engines (code-name 'Nordwerk'). The workforce consisted of some 500 German specialists and 5,000 foreign workers. The latter, mostly Poles and Russians, were not concentration camp prisoners (they received wages, lived in requisitioned billets and did not wear the striped camp garments), and special measures were taken to ensure that they would not get in close contact with the 'Dora' inmates, though such contacts could not really be prevented when people had to work together.

Then, around the middle of June (no doubt influenced by the start of the V1 offensive against London on June 13), Hitler decided that V2 production be drastically reduced, to 150 pieces a month, and the manpower and resources thus freed be used to increase production of V1s and also jet fighters. Thus, the Army's rocket programme was trimmed in favour of two Luftwaffe programmes. As a consequence, V2 production fell from 437 in May to 132 in June and 86 in July.

The same missile being inspected by members of a US Congressional Committee which visited 'Dora' camp and the underground factory on May 1, 1945, as part of their investigation into Nazi atrocities. Left to right are Representatives John M. Vorys (Republican of Ohio) and Ed V. Izac (Democrat of California); Senator C. Wayland Brooks (Republican of Illinois); and Lieutenant Colonel J. K. Reeson and Brigadier General John M. Weir of the US War Department. (USNA)



Above: **Just a few yards further on, on the outer assembly track, stood another V2. The chalking on it tells us that this particular missile was assembled by Combat Command R, 5th Armored Division, by order of Colonel Glen B. Anderson (the CCR commander). (Though captured by the 3rd Armored of US First Army, Nordhausen later came under control of the 5th Armored of Ninth Army.) Judging by the half-cut-away tail unit, it appears the CCR engineers intended this as a worked-out specimen to show the various internal parts of the rocket. (BA)**
Right: **An abandoned V2 fuselage half, pictured by Alvin Gilens in 1994.**



Left: **At the end of the assembly line, the V2 would reach Gallery 41, where, by means of a mobile crane, it would be put upright for final testing. No. 41 was the only tunnel sufficiently high to encompass for the 14-metre (47-feet) missile, its extra-deepened floor giving it a ceiling height of 15 metres. Note the pools of ground water.** *Above:* **In the underground world of the Kohnstein today, only the top of the test stand sticks out of the water. Too deep in the mountain for us to be allowed to photograph it, this spectacular picture was taken especially for us by Alvin Gilens in March 1998.**

Beyond Gallery 42 began the section of the underground factory where, from August 1944 onwards, V1s were produced. This is most probably Gallery 43 (the upside-down chalking on the ceiling beam reads 'Stollen' [Gallery] and a half-hidden figure ending with '3'), and the sign at top left explains what was done here: 'Checking of construction and assembly (altitude steering unit)'. Note the different type of conveyor belt as compared to the V2. Gallery 43 was a deep-floor one and, instead of the more-common two storeys, it had three — this being the bottom floor. (USNA)

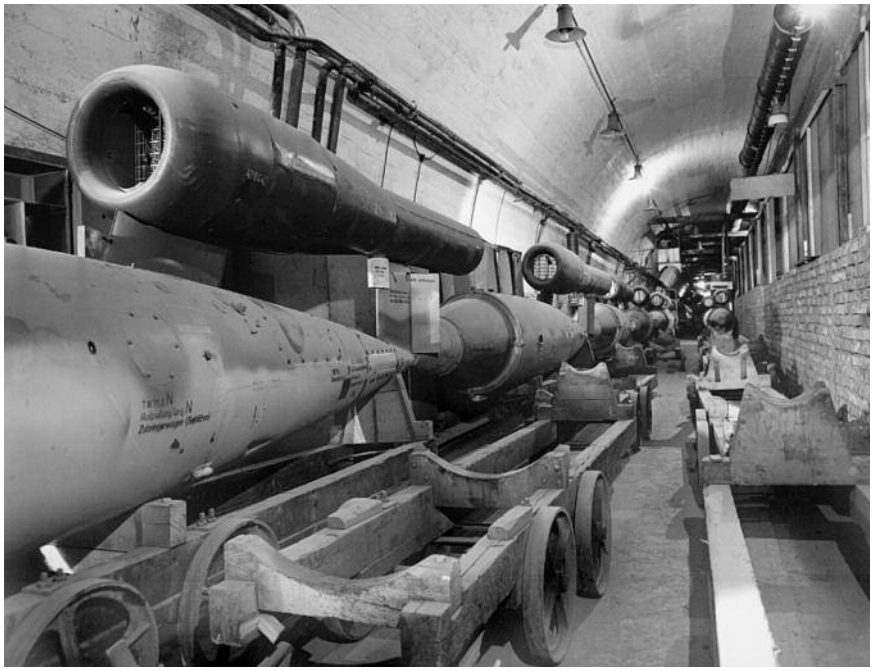
Inevitably, the question arose whether production of V1s, until now concentrated at the Volkswagen factory at Fallersleben (see *After the Battle* No. 10), should not also be moved underground. The A4 Special Committee — now renamed the Sonder-Ausschuss z.b.V. (Special Committee for Special Purposes) — negotiated with the Volkswagen board and, in spite of strong opposition from VW director Anton Piëch, a decision was reached to transfer part of the V1 production to the Mittelwerk GmbH. Again, the V2 factory had to make room for a competitor, Galleries 43-46 being handed over to V1 manufacture in August 1944. From now on, the Mittelwerk housed the production of three different secret weapons: jet engines in Galleries 1-20 ('Nordwerk'), V2s in Galleries 21-42 ('Werk I'), and V1s in Galleries 43-46 ('Werk II').

The Junkers factory in the 'Nordwerk' produced two types of jet engines, the Jumo 004 B-1 and Jumo 004 B-4 for Me 262 and Ar 234 jet fighters respectively. In all, some 1,463 were delivered before war's end. In addition, in August, it received an order for 8,930 of the well-proven Jumo 213 engine. Production did not start until late 1944 and, by war's end, only some 800 had been completed.

The V2 factory in 'Werk I', though now reduced to 22 galleries, reached a steady production of about 600 missiles a month: 374 in August, 629 in September, 628 in October, 662 in November, 613 in December, 690 in January 1945, 617 in February and 362 in March. By the end of the war, a total of some 5,940 V2s had been made here.

The V1 factory in 'Werk II' was initially ordered to start production with 400 pieces in September, rising to 1,000 the following month and to reach a steady production of 3,000 by December. Delivery had hardly begun when, in October, a new decree ordered the Mittelwerk to wind down V1 production until further notice, and only 238 were produced in November. However, the V1 soon regained its priority: in December production had risen again to 1,161, followed by 1,401 in January 1945, 2,275 in February, and 831 in March. In all, 'Werk II' produced over 7,500 V1s.

A different gallery, but still a nice comparison. This is Gallery 45.



Rusted V1 hulls piled up in a corner of Gallery 45.

Above: **Completed V1s in main Tunnel A, south of Gallery 46. Tunnel A at this point had been divided in two by a brick wall, visible on the right. Note the specially-designed wooden trolleys for the V1. (IWM)** *Below:* **Ghosts from the past: the hull of a half-finished V1 in the nearby Gallery 45. As every visitor will agree, to walk through the damp tunnels of the former underground factory, the darkness pierced only by the beam of a miner's lamp, among the rusted remains of Hitler's wonder weapons, is a very strange and eerie experience.**

Heaps of V1 parts lying about in Gallery 45. As a result of the 1948 Soviet demolitions, many of the double floors collapsed, causing the parts stored there to spill out on the bottom floor.

Left: **A heap of spherical holders for the V1 magnetic gyro compass and** *(right)* **a V1 fuel tank.**

In April 1944, Galleries 1-20 were handed over to the Junkers company for the production of Jumo jet engines. Judging by the aircraft engine parts visible, this picture most likely shows one of their workshops. However, if we go by the chalk number visible on the machine on the right — A40 — this could equally well be Gallery 40, part of which was used from October 1944 for jet production too. (BA)

In October 1944, the Mittelwerk received orders to prepare a production line for the He 162 jet fighter, the so-called Volksjäger. This plane — cheap and simple, but very effective — was then still being developed by the Heinkel works (its first test flight was only on December 6), but time was now so short that series production was begun parallel with construction and testing. The Mittelwerk was both to manufacture the plane's body and BMW 003 engine and assemble complete planes (under the project codename 'Schildkröte'). Since space was now extremely scarce, He 162 production had to be divided over various sites inside the mountain (Werk I's part of Tunnel B; alcoves 17 to 27 in Tunnel A, and parts of Galleries 27, 31, 32, 37 and 40) and outside (notably the paper factory at Ilfeld). Only a few hundred He 162s were produced here before war's end.

Right: **A toilet room, built into the side of Tunnel A. Sanitary facilities inside the mountain, especially in the first months, were extremely primitive, but were gradually improved later on.**

USE OF GALLERIES AND TUNNELS, APRIL 1945

'Nordwerk' (Jumo jet engine production)
1 Hospital
2 Jumo barrels and rods
3 Crankshafts, prop shafts
4 Machining miscellaneous parts
5 Storage miscellaneous parts
6 Machine-grindery
7-8 Jumo connecting rods
9 Jumo outer nose
10 Machining crankcases
11 Machining cylinder heads
12 Assembly Jumo engine
13 Machining Jumo parts
14 Storage V1 parts
15 Machining Jumo crankcases
16 Machining V2 turbo pumps
17 Machining V2 parts
18 Machining Jumo and V2 parts
19 Machining Jumo cylinder blocks
20 Machining V2 turbo pumps

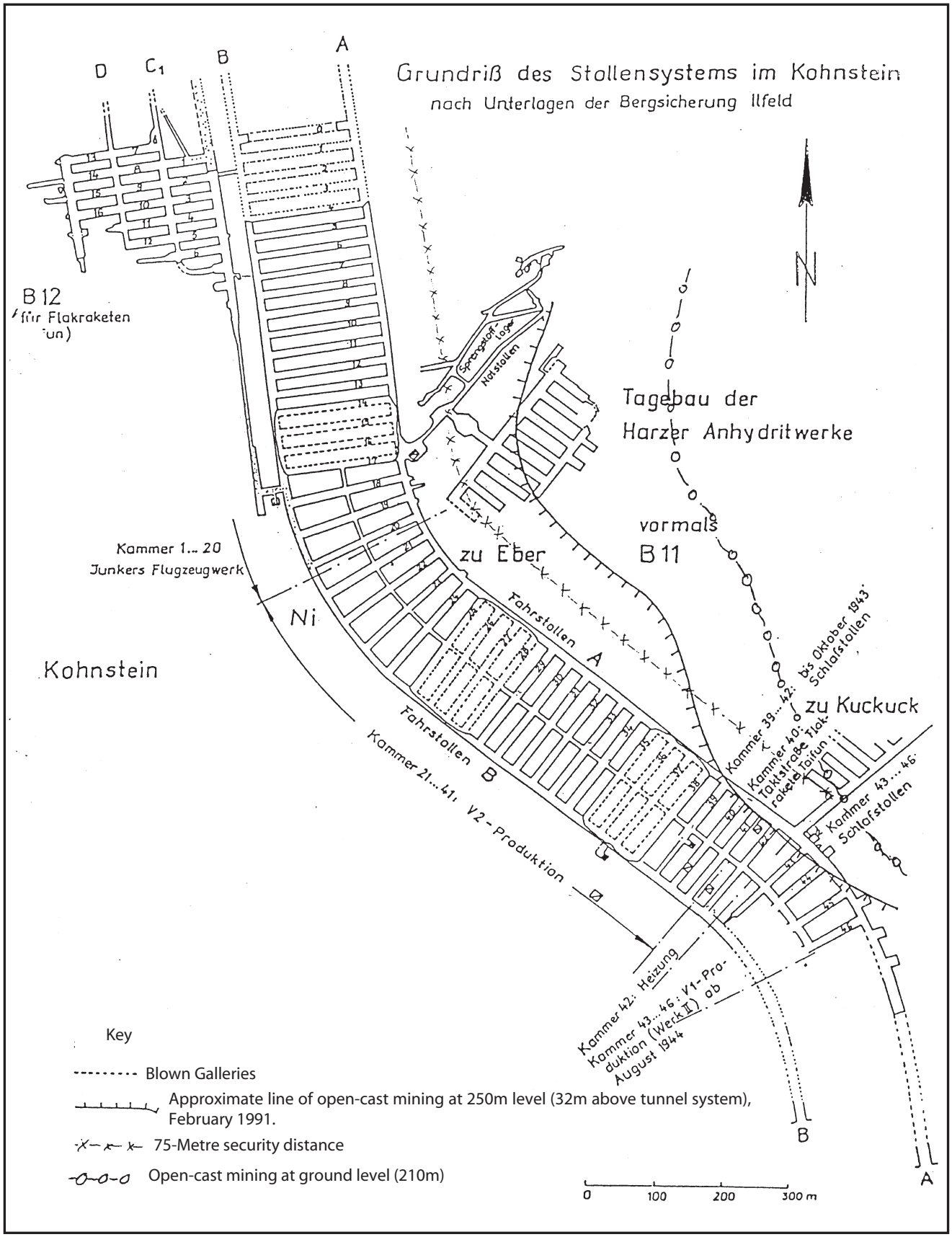
'Werk I' (V2 production)
21 Machining V2 parts
22 Main stock and tool room
23 Sheet metal storage
24 Welding V2 centre section
25-26 Storage V2 tanks
27 Setting new machines
28 Assembly V2 nose
29 Assembly V2 power unit
30 Welding V2 centre section
31 Storage miscellaneous parts
32 Presses V2 parts
33 Presses V2 controls
34 Storage V2 metal
35 Storage V2 tails
36 Storage V2 parts
37 Assembly V2 tail
38 Storage V2 centre sections
39 V2 paint and galvanising shop
40 Machinery being set
41 Upright testing V2
42 Heating and vent machinery

'Werk II' (V1 production)
43-44 Machining V1 parts
45 Welding V1 skins
46 Welding and storage V1s
47 Sub-assembly V1 parts

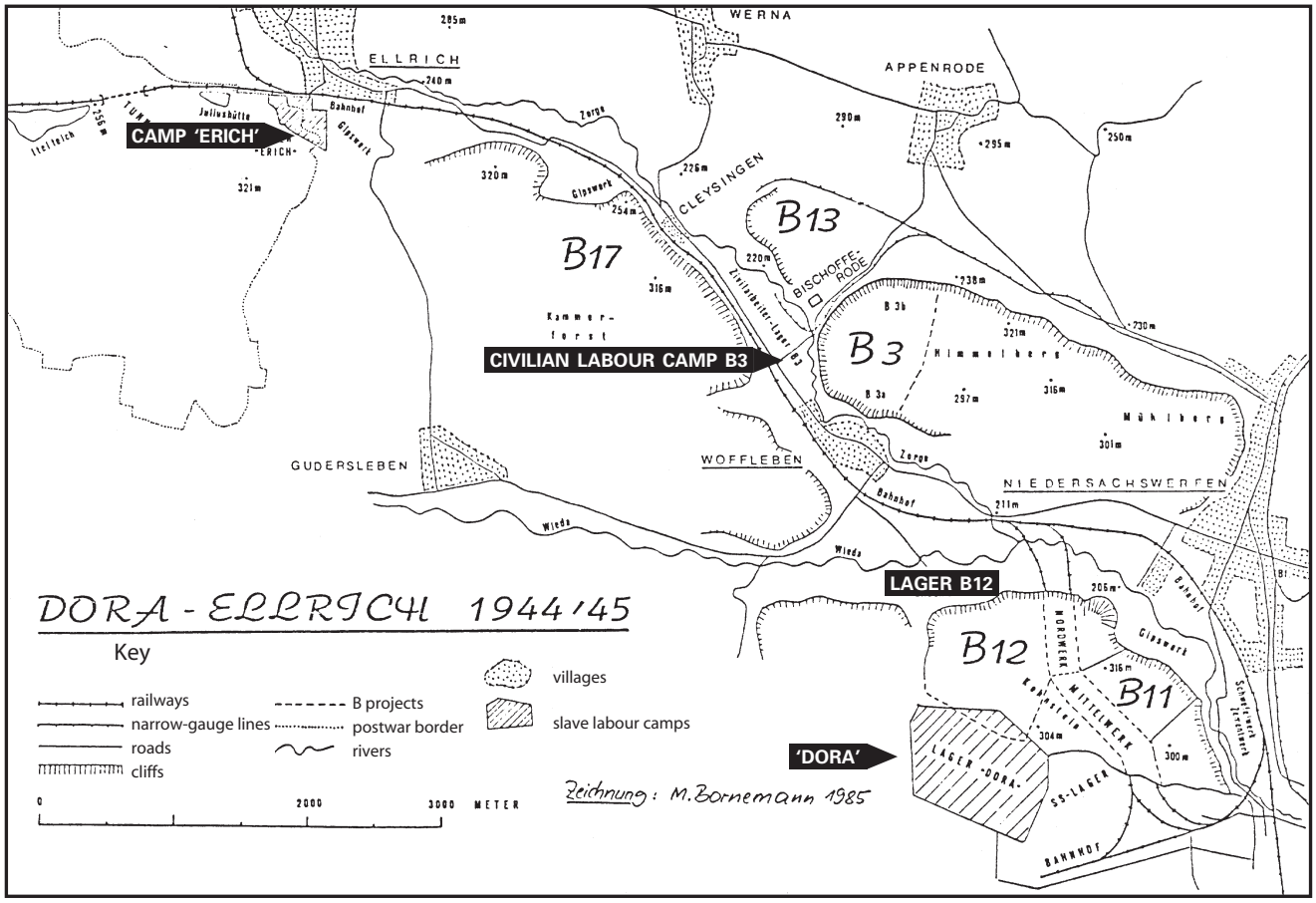
Tunnel A Galleries 1-26:
Transport and supply railways
Galleries 27-41:
V1 assembly line
Tunnel B Galleries 1-20:
Machining Jumo engines
Galleries 21-41:
V2 assembly line

In one of the side rooms of Tunnel A, the Dora Memorial staff have set up a collection of interesting finds from the tunnels. With the stable air and temperature conditions inside the mountain, artifacts are best conserved by leaving them underground.

Oddly enough, there still exists some uncertainty today as to the exact number of side galleries completed inside the Kohnstein, the question being whether there were 46 or 47 (of the 50 planned). Almost none of the sketch plans published after the war agree on the number of galleries completed or the numbering system used. Part of the confusion is caused by the fact that chief engineer Sawatzki, when planning the tunnels in 1943, out of some personal superstition did not want a gallery numbered 16; instead, the first gallery was given the number 0, the first 16 galleries thus becoming 0-15, and the next one after that 17. However, it is unknown whether this strange system was actually used inside the mountain. Solving the question today is thwarted by the fact that the whole northern end of the tunnel complex (from Gallery 4 backwards) has collapsed under the Soviet demolitions, making it impossible to count how many galleries are hidden under the debris there. At the other end of the tunnel, in the last two galleries but one, the original painted numbers '44' and '45' can still be seen on the wall, which would suggest a total of 46. However, the US Strategic Bombing Survey, who documented the complex before it was blown, produced a sketch which clearly shows 47 galleries. The simple solution that what the Americans called Nos. 1-47 was in fact the same as the German Nos. 0-46 does not hold out (even if the latter did include a No. 16), since the USSBS key to the use of galleries in many cases squares with what is known of the German one (e.g. they both have Gallery 29 as the room where V2 engines were assembled) whereas, if 1-47 was identical with 0-46, they should be one number different.



The Dora Memorial hopes to once and for all solve the question when they carry out a new survey of the mountain, including a careful measurement of the collapsed parts, in the near future. The best plan available now is the one (*above*) which was prepared by the Bergsicherung (Mountain Security Authority) Ilfeld in 1991. It shows which Mittelwerk galleries have collapsed as a result of the Soviet demolitions (the dotted parts), and also how much of the mountain has been eaten away by the Niedersachswerfen quarry on the east side. (Note that this plan assumes the existence of a Gallery 0 and 16, and a total of 47 galleries.) The plan also indicates what is left of the adjoining B-11 and B-12 galleries. Now, with the tunnel system declared a protected site, the gypsum factory has to observe a 75-metre security distance at ground level and a 32-metre distance over the tunnels' ceiling. Though this will save the tunnel system, it means that continued quarrying will eventually (in a century or so) remove the whole of the Kohnstein's top and leave only a 'scalped' mountain. (GSMD)



From May 1944, the Germans began the construction of several other secret underground aircraft factories near Nordhausen, not just in the Kohnstein, but also in the Himmelberg just to the north, and elsewhere. Directed by the SS-Sonderstab Kammler and using slave labourers, the building projects themselves were known by code-designations (B-3, B-11, B-12, etc). (Map drawn by Manfred Bornemann.)

Meanwhile, in addition to the V1 and jet factories now inserted in the Wifo tunnels, the construction of a large number of other underground factories was being undertaken in the immediate vicinity of the Mittelwerk. In March, Reichsmarschall Hermann Göring, chief of the Luftwaffe, had charged SS-Brigadeführer Hans Kammler — the same man who had so energetically provided the slave labour for the Mittelwerk — with carrying out the task of building the underground aircraft factories which Hitler had ordained. Since Kammler was an SS man, this of course gave his chief Himmler a perfect chance now also to gain power over the Reich's aircraft production (particularly the new jet fighters).

For his new task, Kammler created a Sonderstab (Special Staff), made up of specialists from his own SS-Amtsgruppe C, the Wehrmacht and the Luftwaffe and divided into four Special Inspection Staffs, which drew up a list of construction projects to be carried out. These divided into A, B and S projects: 'A' projects were bomb-secure spaces to be built in already-existing underground complexes (caves, tunnels, mines, etc); 'B' projects were bomb-secure spaces to be newly built; and 'S' stood for 'Special' projects.

Projects in the Mittelbau area were planned and overseen by Special Inspection Staff II, led by SS-Hauptsturmführer Geissen, with headquarters at Halle. They included:

Project A-5: Eight miles west of Nordhausen, in the natural caves at Uftrungen near Rottleberode (a protected site since 1922), the Junkers factory at Schönebeck in April 1944 installed a production line for Jumo 004 B-4 engines. In all, 8,000 square metres of cave floor were used. A railway line connected the site with the main line at Rottleberode.

Project B-4: Near A-5, in the gypsum massif south of the village of Stempeda, five separate galleries were planned to be dug into the mountain face, totalling 3,000 square metres. In the end, only three were started and, by war's end, only 592 square metres had been completed. The slave workers for both A-5 and B-4, some 900 on average, were housed in Lager 'Heinrich', a requisitioned porcelain factory on the northern edge of Rottleberode.

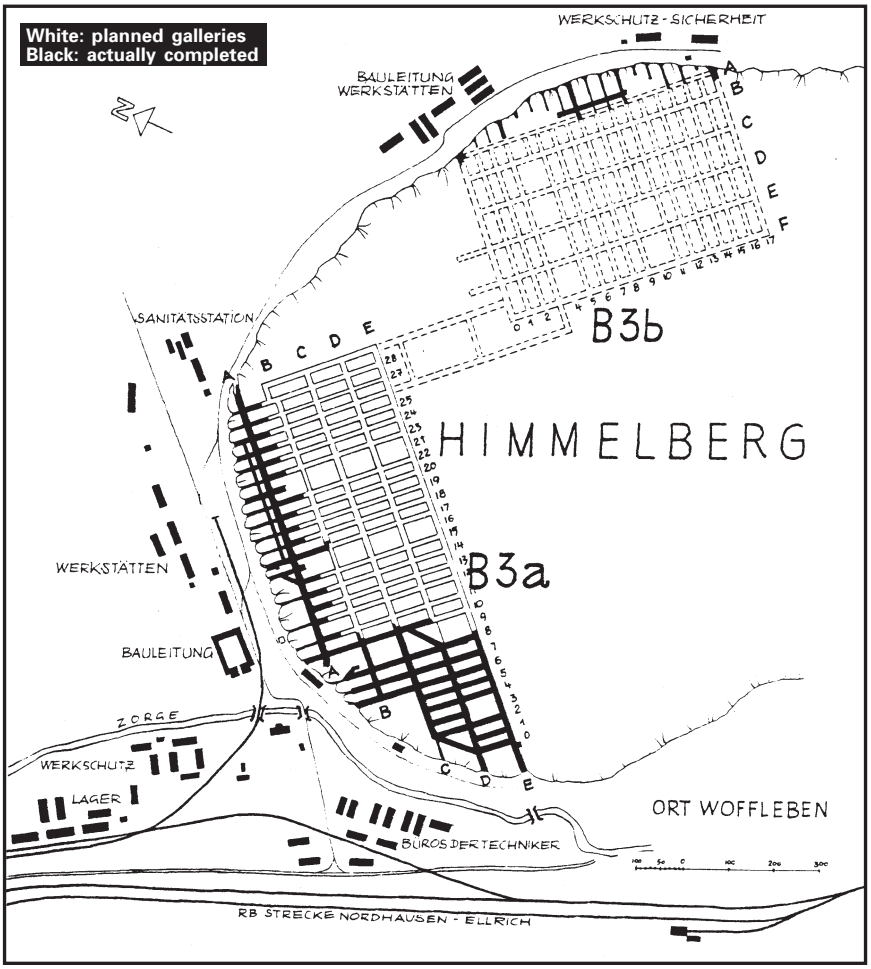
Project B-3a: In the 200-feet-high cliff of the Himmelberg massif at Woffleben, just north of the Kohnstein, a large number of galleries were started, three in the southern face and over 20 in the western, the plan being to create a grid of a few long galleries connected by many lateral ones to a total of 130,000 square metres. Unusual here was the presence of soldiers from a Wehrmacht engineer company from Holzminden, who used the project to try out experimental drilling equipment. Only about one-third (45,000 square metres) of the planned gallery space was actually completed, rocket missile production facilities (code-name 'Hydra') moving into the southern section in February 1945.

Project B-3b: Also in the Himmelberg, to the east of B-3a, near Appenrode, some ten galleries were started in the autumn of 1944, planned to be eventually linked to B3a by two galleries (total 100,000 square metres). In early 1945, the work here was abandoned in favour of another project, S-3 near Ohrdruf in Thuringia. The whole B-3 complex (code-name 'Anhydrit') was serviced by a system of narrow-gauge and normal railway tracks and linked to the main Reichsbahn system. Workshops, offices, transformer stations, pump-rooms, and billets for civilian personnel were in a hutted camp built between Woffleben and Bischofferode.

Slave labourers for both B-3a and B-3b were in hutted camps at Ellrich (camp 'Erich', around 8,000 inmates), Harzungen (camp 'Hans', 4,000 inmates) and Bischofferode (500 inmates), all sub-camps of Buchenwald, later of 'Dora'. The life of the prisoners here — mostly Russians, Poles, Hungarian Jews, gypsies, Frenchmen and Belgians — was made even more miserable because the camps were up to ten miles distant from the work sites, and they had walk there every morning and back in the evening, or travel in overfilled, open trains in all weathers.

Project B-11: In the Kohnstein, between the northern exits of the Mittelwerk complex and the gypsum quarry at Niedersachswerfen, a huge new tunnel complex (code-name 'Zinnstein') was started in May 1944, planned to produce 80,000 square metres of underground factory space. By September, a force of 2,000 civilians and 2,500 slave labourers (from 'Dora' and from the B-3 camps at Ellrich and Harzungen) were at work here. In the autumn, sub-contractors of the Mittelwerk GmbH installed a hydrating factory producing aircraft fuel here (code-name 'Kuckuck I'), using 30,000 of the 53,000 square metres of finished galleries. Also planned here, but partly outside the mountain, was a liquid oxygen factory ('Eber'), liquid oxygen being one of the two propellants for V2s. However, of the planned 15 aggregates and six reservoir containers, only six of the former and two of the latter had been installed by war's end, and no liquid oxygen was ever produced here.

Project B-12: Also in the Kohnstein, on its north side and immediately adjacent to the Mittelwerk tunnel complex, was to come a gigantic underground aircraft factory of over 600,000 square metres — larger than both the Mittelwerk and B-11 taken together — a project that would take years to complete



Projects B-3a and B-3b, in the Himmelberg north of Woffleben, were planned to eventually encompass 130,000 square metres of underground space. By war's end only about one-third of this (the parts drawn in black) had actually been completed and only B-3b taken into use. (Plan drawn by Fred Dittmann.)

(code-name 'Kaolin'). This was one of two giant sheltered aircraft factories ordered by Hitler on April 6, 1944, this one to house production lines of the Junkers company (the other factory was to be in a giant bunker). By the time work was halted in April 1945, the four main galleries — C, D, E and F — had only advanced some 300 metres into the mountain, and eight to ten lateral galleries had been completed, totalling some 30,000 square metres. Some 15,000 of these had been taken into use for production and assembly of He 162 jets. Slave labourers for B-12 came from the B-3 camp at Ellrich, and from a smaller B-12 camp (1,600 inmates) set up at Woffleben in January 1945.

Project B-13: This was not an underground installation, but an umbrella term for the construction of the infrastructure (roads, railways, bridges, etc) for B-3, B-11, B-12 and B-17. A major project was the construction of a new Reichsbahn line through the Helme river valley between Nordhausen and Osterhagen to unburden the existing line from Nordhausen via Ellrich to Zornstein further north through the Zorge valley, now so heavily used for the war industry concentrating in this part of the Harz. The work was done by slave labourers organised in so-called SS-Bau-Brigaden (SS Construction Brigades), transferred here from cities in the Ruhr area and each composed of between 500 to 1,800 men. Bau-Brigaden 3 and 4 arrived in May 1944, Bau-Brigade 5 in August-September, and Eisenbahn-Bau-Brigade 1 in September. Brigade 5 was later split to form Bau-Brigade 1 and Eisenbahn-Brigaden 1 and 3. Several small camps for them were built: for BB3 at Wieda, Osterhagen, Mackenrode (some 300 inmates each) and Nüxei (150); for BB4 at Ellrich (some 500 inmates) and Günzerode (150); for BB1 at Sollstedt (450), EBB1 at Neusollstedt (550), EBB1 probably at Heringen (500) and EBB3 at Kelbra (number of inmates unknown).

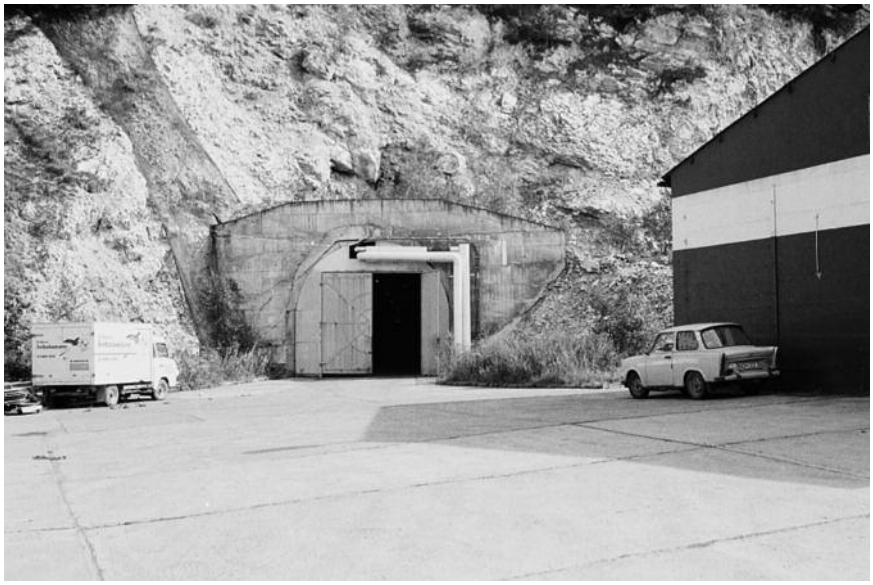
Project B-15: Apart from that it was located near Ellrich, little else is known of this project.

Project B-17: In a closed-down quarry in the Kammerforst forest near Ellrich, two galleries totalling 2,000 square metres were dug to accommodate a filling station (code-name 'Kuckuck II') for the aircraft fuel factory in B-11.

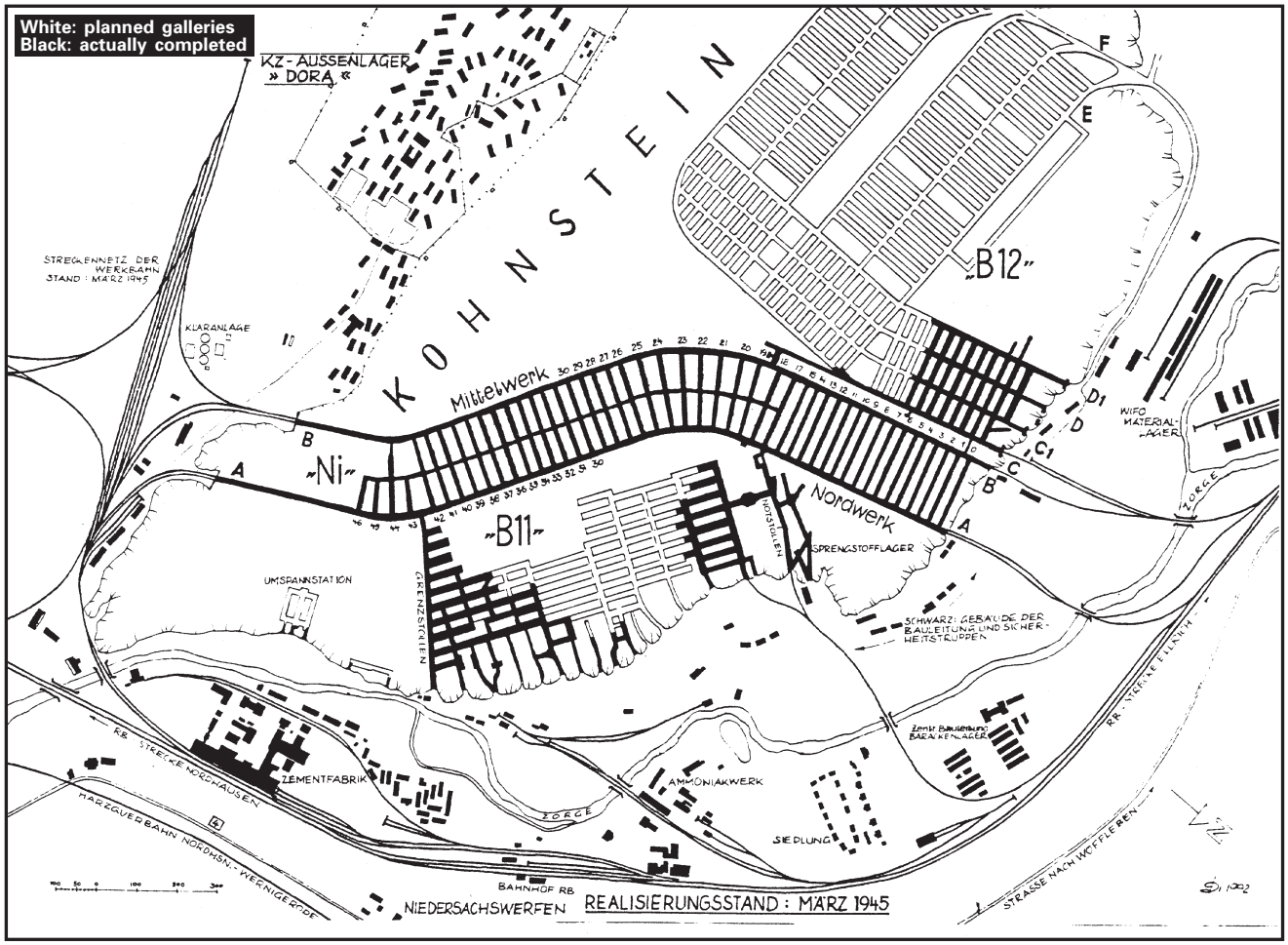
With more and more factories from all over the Reich transferring to central Germany, and concentrating in the Mittelbau region, this part of the Harz was rapidly becoming the industrial centre of the Reich, with the underground facilities of the Kohnstein as its heart. By war's end, the Mittelwerk company employed some 8,000 civilian workers and 25,000 slave labourers in the Nordhausen area.

With ever more slave labourers being sent to the Mittelbau region, and with new smaller camps springing up all over the area, the three main camps — 'Dora', Ellrich and Harzungen — were designated Mittelbau I (Dora), Mittelbau II (Ellrich) and Mittelbau III (Harzungen) on September 10, 1944. All were still Aussenlager (sub-camps) of Buchenwald. However, to reflect the growing importance of 'Dora', its status was changed. On October 1, 1944, it was made a Hauptlager (Main Camp), independent of Buchenwald, the camps in the region becoming its Aussenlager. On the day the new set-up came into effect, October 28, the number of inmates (all camps together) was 32,532.

Meanwhile, Himmler had successfully continued his campaign to gain complete power over all of the Third Reich's secret weapons. In the aftermath of the July 20 attempt on Hitler, he had seized direction of the Army's armaments department and thus gained total control of Peenemünde and the rocket programme. In August, he appointed Kammler (promoted to SS-Gruppenführer) his Plenipotentiary for the A4 Programme. In November, Hitler put Kammler in charge of various development projects for anti-aircraft rockets. But Himmler also wanted his SS to control the V1 and jet fighter programme. The first was achieved on January 31, 1945, when Kammler became commanding general of the Armeekorps z.b.V, responsible for deployment of all V-weapons; and the second in late February, when Kammler was in addition to all his other functions appointed General Plenipotentiary of the Führer for Jet Fighters.

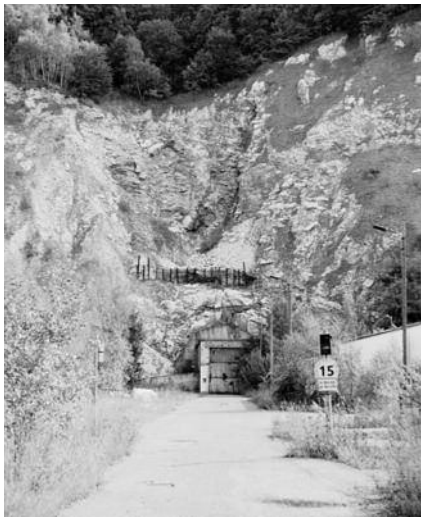


Closed, like the Mittelwerk, by Soviet demolitions after the war, part of the B-3a tunnels was opened in the 1980s by the GDR authorities to install a mushroom nursery. The entrance to it was made through Tunnel 10 on the west side of the Himmelberg. Today, the underground farm has passed from collective to private ownership.



Even larger were the two projects planned on either side of the Mittelwerk complex in the Kohnstein, B-11 and B-12. Again, only a small part of the underground space planned was ever completed (about 65 per cent of B-11 and only five per cent of B-12), and about half of that actually taken into use by the aircraft industry before war's end. (Plan by Fred Dittmann.)

B-11 has now almost completely disappeared by 50 years of quarrying. This is the view of the Kohnstein and the site of B-11 as seen from the Mühlberg. Niedersachswerfen and the gypsum factory are on the far left.

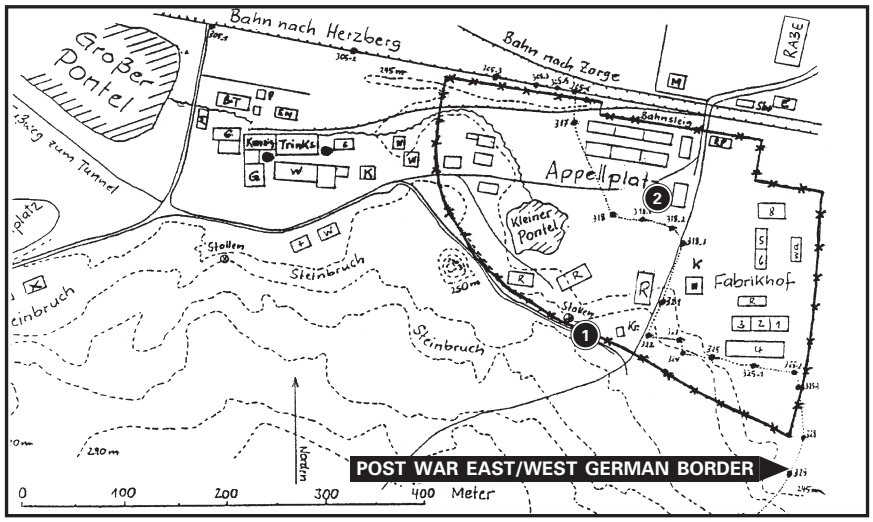


Left: **The B-12 tunnels were reopened by the GDR authorities in 1965-66 and converted into a cold-storage warehouse for fruit, vegetables and tinned products for the surrounding region. This is the entrance to Tunnel C, opened in May 1965.** *Right:* **A deserted loading ramp hides the entrance to Tunnel D today.**

In late January 1945, Kammler ordered a final concentration of all scientific, experimental and productional capabilities in the Mittelbau area: a new Entwicklungs-Gemeinschaft (Development Association), headed by the scientist Alfred Buch, was to unite all firms and institutes involved in flak missile research, all of which were required to move to the Mittelbau area. Responsible for directing development and testing would be a new agency created by the Armaments Ministry, the Arbeitsstab (Work Staff) Dornberger, while production would be coordinated by the old Special Committee.

In early February, the Arbeitsstab Dornberger set up headquarters at Bad Sachsa, 12 miles north-west of Nordhausen. One by one, the development firms involved — the Electromechanische Werke GmbH (the old Heeresversuchsanstalt Peenemünde, now changed to a private firm), Ruhrstahl AG, Gyroskope AG, Walterwerke AG, the Henschel and Dornier aircraft works, etc — moved their establishments to the Nordhausen area.

Personnel and equipment from Peenemünde — moving by train, car, truck and river barge — settled down in Bleicherode, ten miles south-west of Nordhausen. (Travelling there by car in early March, von Braun



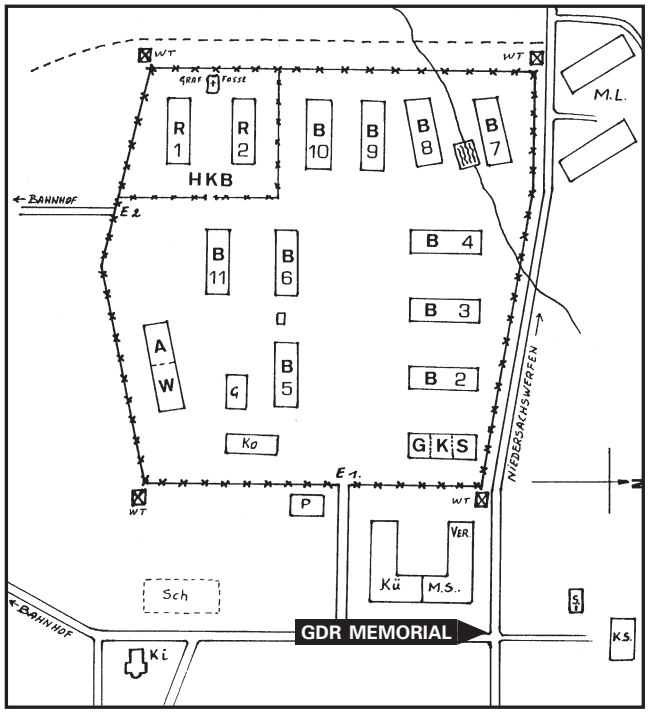
The slave workers for B-3, B-11 and B-12 were housed in camp 'Erich' at the village of Ellrich, three miles further west along the Zorge valley from Woffleben. Conditions in this sub-camp were at times more deadly than at 'Dora'. Key to buildings: [K] Kitchen, [X] Quarantine, [P] Stables, [R] Sick bay, [Kr] Crematorium, [RP] Guardhouse. The SS were billeted in the houses and factories around the camp. (Map by M. Bornemann.)

Left: **After the war, Ellrich became an East-German border town, off-limits to everyone except local inhabitants and GDR border police. In fact, 'Erich' is probably unique in being the only former Nazi concentration camp cut through by the Iron Curtain — the East-German border security strip running right through the site where it had been. However, the high ground immediately overlooking it was West-German and, with access to the camp itself being impossible, a memorial stone ([1] on the plan) was set up here.** *Right:* **With the German reunification, the site finally became freely accessible again, and in May 1994 the Louvain branch of the Belgian camp survivors association erected a new memorial, this time on the actual spot ([2] on the plan).**

was put out of action when he broke his arm in a car accident.) The research workshops and laboratories were provisionally set up in the nearby salt mines at Bleicherode, Neubleicherode and Sollstedt but, with the war obviously coming to its end, no serious work was ever done there.

Also in February, the Mittelwerk was ordered to take up series production of yet two more secret weapons, both small anti-aircraft rocket missiles and seen as the last-ditch weapons against the enemy air onslaught: the Taifun (a slim 1.9-metre-long ground-to-air missile weighing 19 kilos) and the Orkan (an 81-centimetre-long air-to-air missile weighing 4 kilos). Of 70,000 Taifuns ordered, 50,000 were to be of the 'P' (solid fuel) and 20,000 of the 'F' (liquid fuel) type. In March, Taifun production facilities at Oppau, Piesteritz, Linz, Trostberg, Rotterdam, Haarlem a.o. were transferred to the Mittelwerk. A production line was set up in the finished galleries of complex B-3a at Woffleben, but production never really got off the ground. When the war ended, only some 800 Taifuns, mainly of the P type, had been made here. As for the Orkan, it appears some 6,000 were manufactured, also in B-3a.

Earlier, in December 1944, the Henschel firm had already transferred part of its Berlin-Schönefeld factory to B-3a, their leading rocket scientist Professor Herbert Wagner installing research and production workshops there for Hs 117, Hs 298, X4 and X7



Left: **Slave workers for B-3 and B-11 were also at Harzungen, located two miles east of Niedersachswerfen. [R] Sick bay, [GKS] Storage rooms, [Kü] Kitchen, [AW] Baths/WC, [P] Guardhouse. (Maurice Bouchez)** *Top right:* **A memorial from GDR times marks the site.** *Above:* **An original camp hut survives on the spot.**

flak missiles. The Hs117 even reached series production (some 1,400 were made), but a Kammler order on February 6 forbade further production of all four types, although research on the Hs 117 and X4 could continue.

Finally and completely unannounced, on March 5, the main staff of the Armaments Ministry moved into the Mittelwerk. Its chief, Karl Otto Saur (Speer's deputy since July 1944), had first ordered its evacuation from Berlin to Blankenburg in the Harz in February. When rumours sprang up that Blankenburg would be bombed, Saur, overriding all protests, demanded refuge in the underground shelter. One half of the offices in Gallery 1 were to be made available; they were luxuriously fitted out with glass doors, carpets and heated baths. To the prisoners of 'Dora' who saw them, these rooms and their occupants seemed like from another world. (Saur's staff also took over galleries in the nearby Mühlberg, hitherto used by the people of Niedersachswerfen as air raid shelter.)

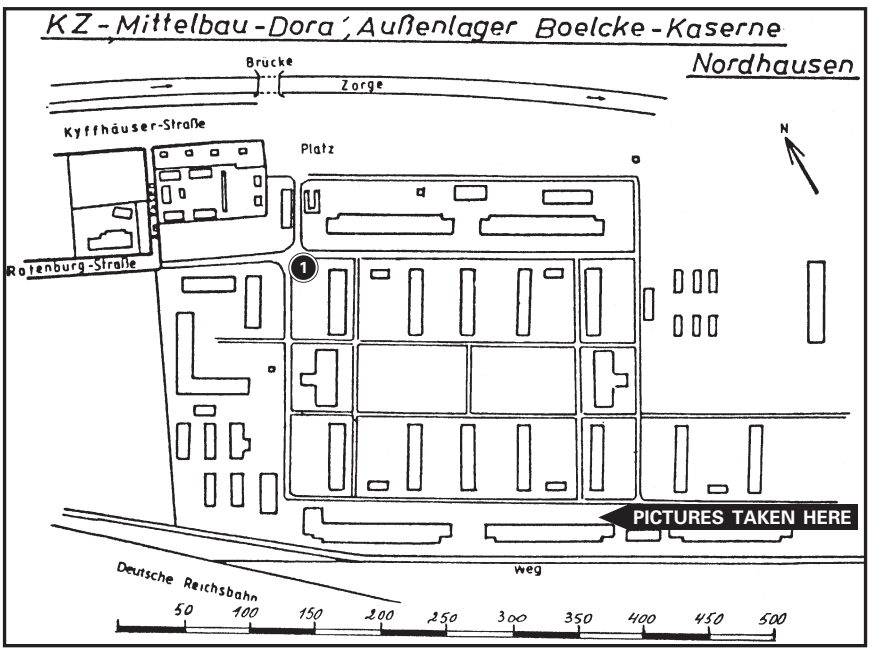
Between all the new staffs, industries and institutes moving in with their personnel and machines, occurred the far more dramatic arrival of thousands of slave prisoners who had been evacuated from other camps. These wretched creatures arrived sick and hungry, having travelled for days in open trains in freezing cold, often without food or water. Many had died on the way. The first group, 1,000 prisoners from Buchenwald, arrived on January 24. It was followed in the next weeks by three from Auschwitz (some 4,000 persons), two from Gross-Rosen (4,700), one from Ravensbrück (992), again two from Gross-Rosen (5,324), and, in March, by one each from Bunzlau (441) and Aslau (487). Most of these 17,000 new inmates came to 'Dora', which was completely flooded by the new influx. The camp cinema (Block 131) was vacated and 1,200 crammed into it. On January 10, 'Dora' opened a sub-camp in a Luftwaffe barracks in Nordhausen, the Boelcke-Kaserne, which it used to accommodate sick prisoners, and the whole of the Gross-Rosen transport of February 16 (3,501 persons) was diverted there, as were the 487 inmates from Aslau on March 19.

Some of the new arrivals were put to work, but the majority was far too weak or sick to do any labour. The camp crematorium could not cope with all the dead and, in late February, corpses had to be burned in pyres in open air. On March 8, another transport of 2,250 sick and invalid inmates was shipped off to Bergen-Belsen.

With the inmates from evacuated camps came the SS guards and officers of these camps, many of them even more cruel and brutalised than those at 'Dora'. The reign of terror worsened. The number of dead from beatings and executions rose. An attempt by Russian and Polish inmates to break out of the 'bunker' on March 9, ended in them being massacred by the SS. There followed several mass executions on the roll-call square, some 52 inmates being hanged on March 10 and another 57 on March 20-21.

With enemy armies closing in from east and west, preparations were made to defend the Kohnstein. A Wehrmacht battalion was stationed at Ilfeld and several Volkssturm companies organised. However, the inevitable end could no longer be averted. By early April, all production came to a halt. Papers were burned, and key managers and scientists ordered to make their way to Oberammergau in Upper Bavaria. Albin Sawatzki, disobeying an SS order to blow up the Mittelwerk factory, stayed behind determined to hand over the complex, of which he was so proud, to the Americans.

On April 3/4, and again the following night, RAF bombers bombed Nordhausen, destroying half the town and killing some 8,800 people, both locals and German refugees and slave workers. Hardest hit was the Boelcke-Kaserne, were some 450 camp inmates were killed in the first raid and 1,000 in the second.



In January 1945, the SS took over the Boelcke-Kaserne, a Luftwaffe barracks on the other side of Nordhausen town (see map on page 2), to cope with the rising number of sick and invalid inmates. In the weeks following, prisoner groups arriving from other camps were also diverted there, and by early April some 3,500 inmates — French, Belgians, Poles, Russians, Germans — were accommodated here.

On the nights of April 3/4 and 4/5, the barracks were hard hit when the RAF bombed Nordhausen town, and over 1,450 inmates were killed. When, six days later, US ground forces reached Nordhausen, they found the starved, emaciated survivors among the mangled corpses of the dead and dying. Many of the dead had succumbed to hunger, exhaustion or maltreatment. Others had been machine-gunned by the SS guards when they attempted to run for cover during the air raids. However, the awkward fact that most of the dead found at the Boelcke were victims of Allied bombing rather than of SS killings was played down or left unsaid in the contemporary accounts — the caption to this photo by Signal Corps photographer Tech/4 James E. Myers for instance just says that they 'died of starvation or were shot by Gestapo men'. (USNA)

Meanwhile, SS-Sturmbannführer Richard Baer, who had succeeded Otto Förschner as commander of 'Dora' on February 1, had begun preparing the evacuation of all 40,000 inmates then still in the Mittelbau area. When Baer was wounded in a car crash shortly after, his deputy, SS-Hauptsturmführer Franz Hössler (see *After the Battle* No. 89, page 22), took over. Between April 4 and 7, all camps were emptied: inmates from 'Dora', Ellrich, Woffleben and the sick from Harzungen by train to destinations in northern Germany (Bergen-Belsen, Sachsenhausen, Ravensbrück); those from Harzungen, Rottleberode, Ilfeld and from camps BB3 and BB4 on foot to the north and east. Many were still to die, from exhaustion or shot by SS guards. One group of over 1,000 prisoners was locked in a barn near Gardelegen and burned alive.

In the days after, the local authorities around Nordhausen used the now-vacated secret weapons factory to shelter some 15,000 civilians, including several hundred patients from the town hospital.

On the morning of April 11, Combat Command B of the US 3rd Armored Division occupied Nordhausen, finding 405 emaciated prisoners surviving among the dead and debris at the Boelcke-Kaserne. The underground factory was only discovered in the late afternoon, by another CCB task force which approached the Kohnstein from the direction of Ellrich. Entering through the northern entrance, the American GIs were

Today, a huge industrial complex covers the site of the Boelcke Barracks, and only a few of the original buildings survive. Luckily for us, these include the ones in the Signal Corps pictures, though we had to sneak into the estate on a Sunday to take our comparison.

Troops of both the 3rd Armored Division and the 104th Infantry Division, who arrived in their wake, helped in the relief of the Boelcke Barracks. Sergeant Ragene Ferris of the 329th Medical Battalion, 104th Infantry Division, testified: 'We were battle-tired and combat-wise medics and we thought there was nothing left in the books we didn't know. Yet in a short period of two days, I and many others of the division saw and lived a story we shall never forget. We dismounted, litters in hand, and started for the nearest building with a sense of morbid anxiety. It was a sharp sting of reality which met us at the first doorway. Bombs had ground flesh and bones into the cement floor. Rows upon rows of skin-covered skeletons met our eyes. Men lay as they had starved, discoloured, and lying in indescribable human filth. Their striped coats and prison numbers hung as a last token or symbol of those who enslaved and killed them. In this large motor shop there were no living beings; only the distorted dead. We went to the stairs and under the casing were neatly piled about 75 bodies, a sight I could never erase from my memories.' (RIOD)

Sergeant Ferris: 'Dying on the second floor were, upon later count, about 25 men or half-men. Some of these, lying in double-decked wooden bedsteads, were grotesque yet hanging tenaciously to life's breath. They were still alive.' (RIOD)

A 3rd Armored Division soldier talks to a group of French political prisoners. Although the distinction is rarely made, American eyewitness accounts of 'Nordhausen concentration camp' usually describe the Boelcke-Kaserne rather than 'Dora'. (RIOD)

To speed up relief, Lieutenant Colonel Hugh W. Jones, the 104th Division chief surgeon, and Captain George L. Steinbeck, chaplain of the 329th, who spoke German, had about 100 male citizens of Nordhausen rounded up to clear away the rubble, act as litter-bearers and bury the dead. (USNA)

The industrial site is a closed area, but a memorial to the victims of the sub-camp and the bombing stands at the factory gate ([1] on the plan on page 34).

Left: **The dead from the Boelcke were buried in mass graves dug by German civilians in a field opposite the communal cemetery, on a hillside overlooking Nordhausen, about one mile from the Boelcke Barracks, and on the same side of town. Picture taken by US Army photographer Pfc John R. Briza on April 14. (USNA)** *Right:* **Looking back to the entrance of what is now the KZ-Ehrenfriedhof (Concentration Camp Cemetery of Honour) on Stresemannring, with the Hauptfriedhof beyond.**

completely surprised to find a huge and completely intact bomb-proof factory. Soon, they were led to the camp near the southern exit, where they found some 700 weak inmates who had been left behind in the sick bays, and the corpses of those who had not been burned. The medical troops of the 3rd Armored, and of the 104th Infantry Division which followed them, began immediate relief of the survivors, transferring them to emergency hospitals set up on Nordhausen airfield. Male citizens of Nordhausen were rounded up and ordered to carry the litter cases and corpses, and dug mass graves on a prominent hill outside the town. In all, of some 60,000 prisoners sent to 'Dora-Mittelbau' between 1943 and 1945, an estimated 20,000 — one-third — had perished there.

Digging the grave pits and filling them with corpses took several days. (USNA)

Left: **By April 18, when Signal Corps photographer Zwick took this picture, the mass graves had been landscaped. The view is south, towards the Boelcke Barracks (indiscernible in the far distance on the left). The main road leading into town in mid-distance is the Hallesche Strasse. (USNA)** *Right:* **Today, symbolic crosses mark the mass graves in the KZ-Ehrenfriedhof. Trees hide the view of Nordhausen. The German Kriegsgräberfürsorge has recently restored the cemetery.**

On the same day it liberated the Boelcke Barracks, the 3rd Armored Division also discovered 'Dora'. Most of the 10,000-odd inmates had been marched out by the SS the week before, and the Americans found only a few hundred inmates who had been left behind in the camp sick-bay. On May 1, the US Congressional Committee investigating Nazi atrocities (which we saw inspecting a V2 on page 22) made a tour of the camp. Here they are seen walking up the central Lagerstrasse. The hut in the centre is Block 34, the storehouse, with the high fence of the camp sports ground sticking out beyond. Up on the far right is the camp prison. One Congressman said of the SS: 'They reached depth of human degradation beyond belief and constituted no less than organised crime against the civilisation and humanity for which swift, certain and adequate punishment should be meted out to all those who were responsible.' (USNA)

Above: **On June 6, 1945, another American delegation, this time of the American Legion, toured the camp. Here, their cars are just passing the entrance to Tunnel B (away on the right). Beyond the concrete mixer and the V2 fuel tanks are the huts and buildings of the SS compound. On the left lie V2 half-sections, the cones of the rocket's apparatus compartment and more fuel tanks. (USNA)** *Right:* **The two pairs of gate posts make for an easy comparison.**

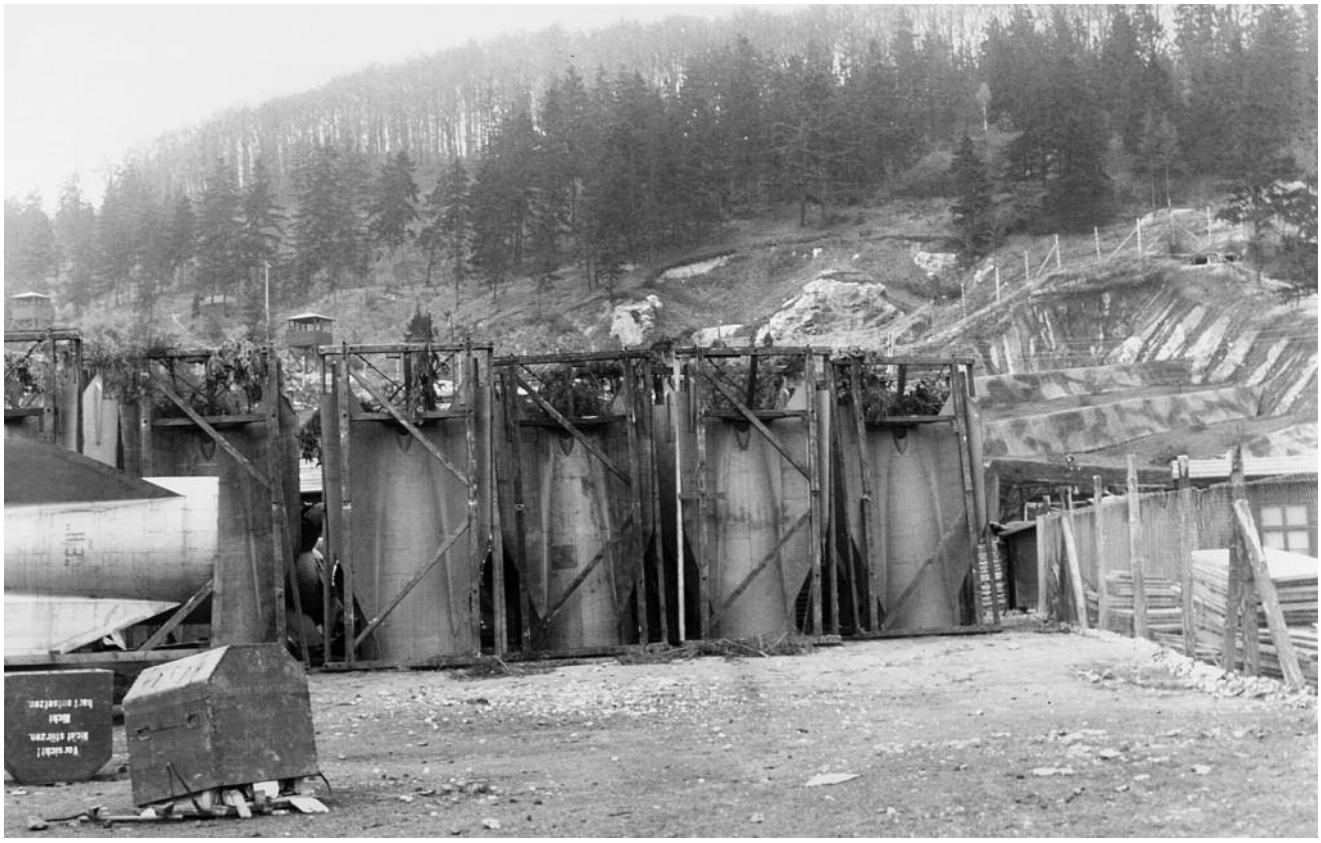
In the days after, numerous Intelligence teams of the US Army, Air Force and Navy inspected the underground facilities and questioned every German specialist whom they managed to find. The most active team was one led by Major Robert Staver of the US Office of Scientific Research and Development. Another was the USAAF's Strategic Bombing Survey team. Also, from May 5-22, a British research commission, SHAEF's Central Intelligence Sub-Committee (CIOS) Team No. 163 led by Colonel W. R. J. Cook, made a thorough inspection, not just of the Kohnstein complex but of all the other underground construction projects and secret objects in the Mittelbau area.

Right: **Outside the camp, the Allies found large quantities of V1 and V2 parts, stored in the open for lack of space inside the mountain. These V2 tail units are along the road just before the entrance to Tunnel A (the turn-off can be seen in the distance on the right). The box-car train in the background stands on one of Tunnel A's rail tracks. (BA)** *Below left:* **The curve of the camp road helps to pinpoint the spot.**

Right on the line of the train track now stands the waggon commemorating the prisoners who died during the harsh train journeys to and from 'Dora'.

Two liberated slave labourers pose for Signal Corps photographer Pfc John Briza beside a V2 tail unit. (USNA)

Nordhausen was in the Russian zone of occupation as agreed on at the Yalta Conference, and officially the western Allies were not allowed to remove any industrial machinery, equipment, or scientific information from it. However, between April 11 and May 6, Major Staver, who was mainly interested in rockets, had numerous completed V2s and all complete specimens of the Taifun (P), Hs 117, Hs 298, X4 and X7 missiles, together with every document and blueprint his men could find, packed in crates and sent via US Ninth Army G-2 to Paris. From what was left, the British in turn had their pick, removing individual components of the V2 rocket and C2 missile and various radio and navigational apparatus. Another catch were the Peenemünde scientific archives. After a long search, Staver finally found the ten tons

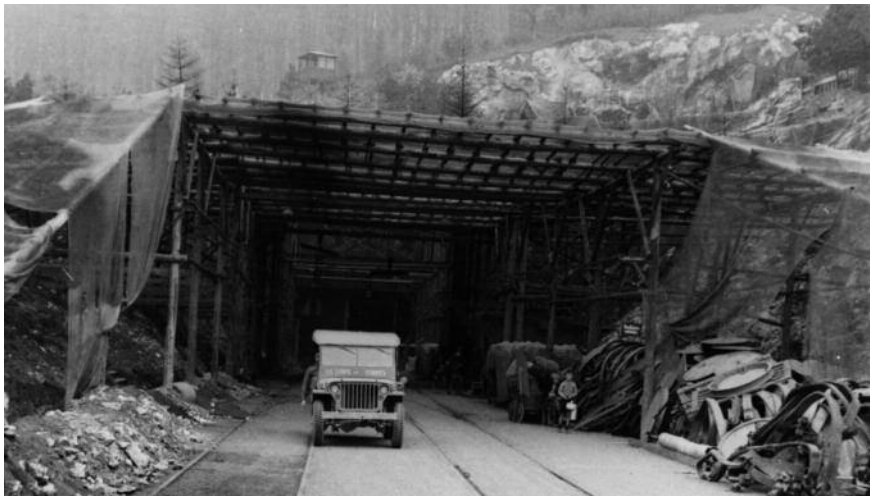


More V2 tail units, these ones packed in transport frames, parked behind the welding shop (Schweisshalle — see the plan on pages 12-13) outside Tunnel A. The camouflage of the tunnel entrance can be seen on the right. Compare with the pictures on page 7. (USNA)

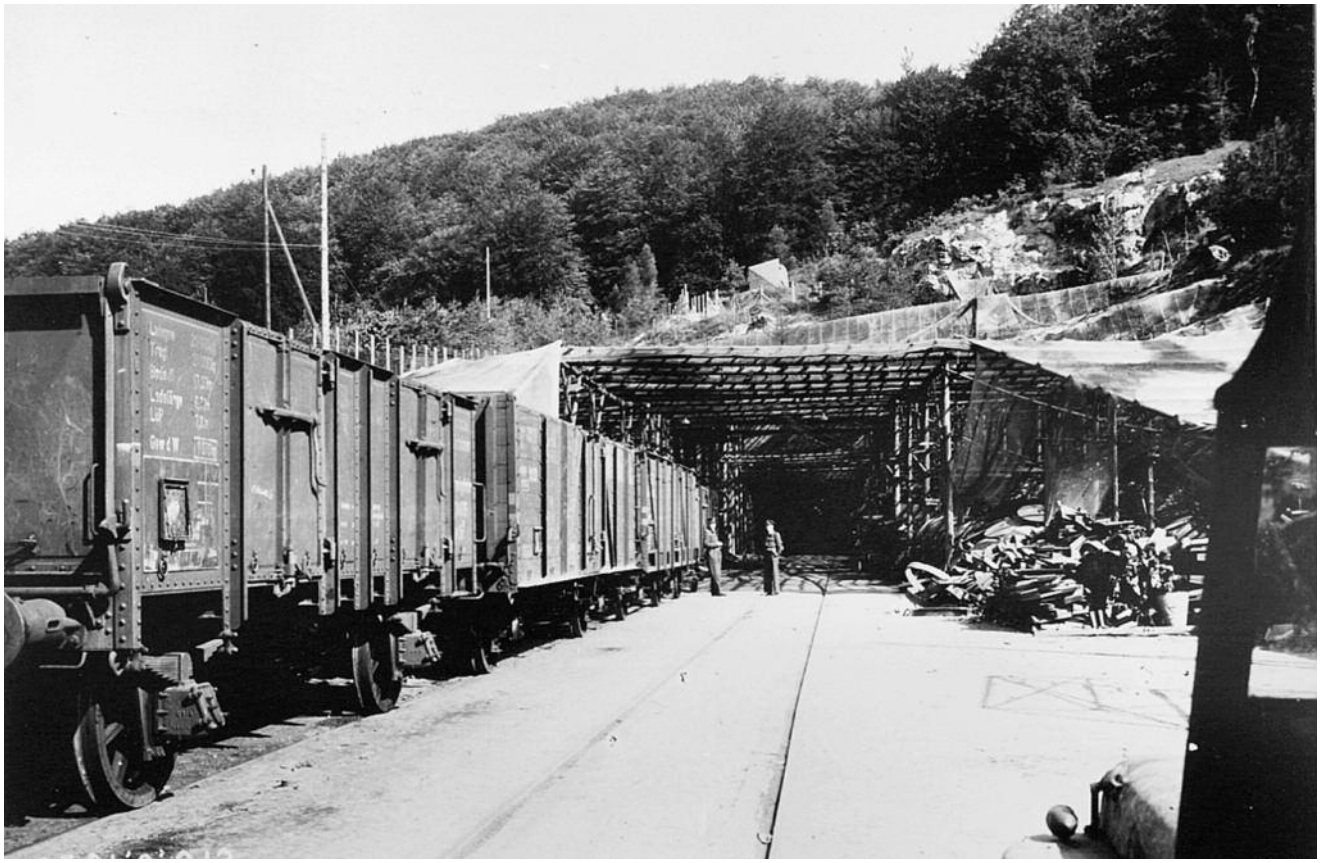
of crated documents around the middle of May in the deserted 'Georg-Friedrich' iron-ore mine at Dörnten near Goslar, where a special squad of von Braun's men had buried them in early April. And just before the Russians moved in, Major James P. Hamill of the US Technical Information Mission in Europe removed enough of the half-finished V2s found left on the assembly line in Tunnel B plus component parts, shipping them from Antwerp to New Orleans, to enable the Americans to later assemble 100 rockets from them (see *After the Battle* No. 6).

Almost on the same spot, rows of V2 combustion units and, partly under canvas, V2 apparatus compartments. The welding shop is visible on the left. (USNA)

Right: **Of course, the secret underground factory, captured completely intact, attracted much attention from Anglo-American scientific intelligence teams. Though bound by the Yalta agreement not to remove anything, the Allies carried off a large number of V2s, experimental missiles and tons of scientific papers before the Russians arrived in July. Here, a US Jeep is seen leaving Tunnel B. Compare with the pictures on page 6. (RIOD)**
Below: **One of the units helping SHAEF's scientific Team No. 163 to remove hardware from Nordhausen was the 1680th Artillery Platoon, RASC. They arrived on June 5 with 26 3-ton trucks. In addition to loading several trains, they despatched four vehicles loaded with 'special equipment' to Brussels by road on the 14th, leaving themselves on the 19th. Lance Corporal John Pike pictured one of the platoon's Bedfords along the Mittelwerk railway. (via Percy Upton)**



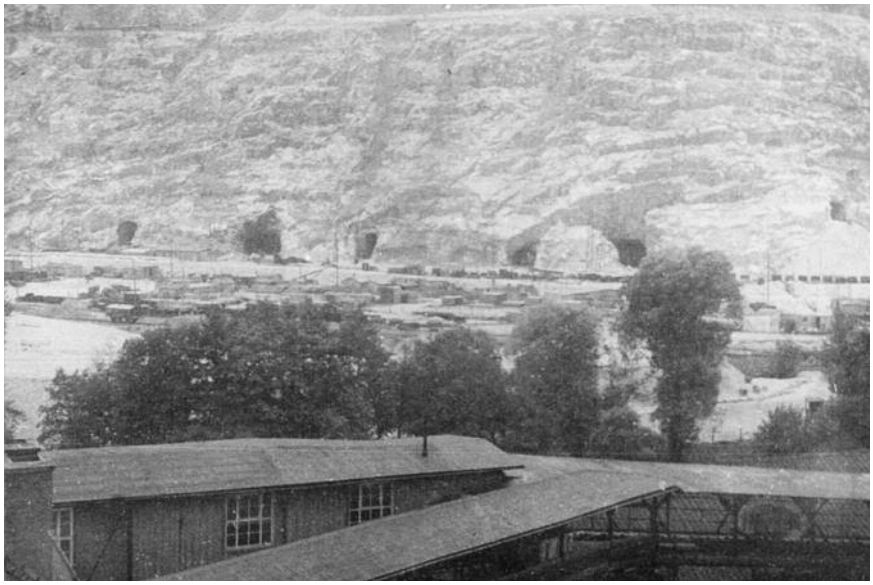
This snapshot, taken by Driver Rich Edwards, shows two of the platoon's trucks near the entrance to Tunnel B. (via Upton)



Tunnel B pictured by a member of the British research team in May 1945. The train is probably one of those used by them to remove V-weapon parts from the factory. Note that the watch-tower above the entrance has now collapsed. (BA)

On July 1, 1945, the Americans handed the Nordhausen area over to the Russians. Despite repeated requests by many of the captured German managers and scientists not to let the secret factory fall in Soviet hands intact, the Americans had refused to destroy it. The first Russians to find the tunnel complex were a four-man team under Lieutenant-Colonel Vladimir Shabinsky, who had come to inspect the Niedersachswerfen cement factory and only came upon the underground factory by chance. Although no assembled rockets were left and all scientific papers and major scientists had been removed, the Russians found an intact assembly line, masses of component parts and enough knowledgable lower-echelon personnel to enable them to again start up production of V2 rockets at Nordhausen itself. To seduce the German engineers, foremen and craftsmen into cooperating, the Russians offered them good houses, high wages and plenty of food and clothing for them and their families. They even managed to secretly lure technicians in the western zones back to the Russian zone.

While the rest of the underground factory was systematically dismantled and shipped off to the Soviet Union, a part of the assembly line was moved to the buildings of the salt mine at Kleinbodungen, which had previously served as Mittelwerk repair workshops, and a special 'rocket reconstruction office' set up at Bleicherode. The whole project was directed by a Technical Special Commission, led by General Kutshnik (later General Gaidukov) with headquarters at Nordhausen. The new rocket factory, known as the 'Central Works', was led by Hellmut Gröttrup, who had been one of von Braun's electric equipment specialists. Between August 1945 and October 1946, the German and Soviet technicians first reconstructed, then built A4 rockets. Components no longer available were simply ordered anew at the supplier (some orders even being placed in the western zones, the components being secretly smuggled out!). Test firings were conducted at Lehesten in Thuringia, where there had been a factory producing liquid oxygen for V2s, and later at Peenemünde.



Like the Americans, the British thoroughly explored all the various underground facilities before the area was surrendered to the Russians. These are the tunnel entrances of B-11 at Niedersachswerfen, pictured by John Pike of 1680th Platoon. (via Upton)

However, the German technicians were in for a surprise. On October 22, 1946, Red Army units sealed off Bleicherode and announced the forced 'evacuation' of all German specialists and their families, some 2,000 people in all, to the Soviet Union. Everyone and everything was loaded on a special train which left Kleinbodungen on the 25th for Moscow. Most would come to work at the ballistics research station on the island of Gorodomlia in Lake Seliger, 200 miles north of Moscow, there to develop the Soviet R10 and R14 rockets before being gradually allowed to return to Germany in 1950-55.

The complete dismantling of the Mittelwerk complex took till the spring of 1948. That summer, the Soviets filled the underground factory with explosives and tried to blow it up. The detonation failed to produce the desired result, so they sealed the tunnels by blowing up the entrances.

After liberation, camp 'Dora' was used by the Americans as a Displaced Persons camp. In August 1945 and a few weeks after, the Russians used it to intern former Nazis. From November, it housed German refugees, mainly Sudeten Germans driven out from Czechoslovakia. Dissolved in August 1946, the camp was broken up and all the huts, guard towers and the camp fence were pulled down.

Summer 1948: the Soviet occupation army closes the Kohnstein tunnel system with demolitions. Picture by H. Beikirch from the Johannisberg hill. (GSMD)

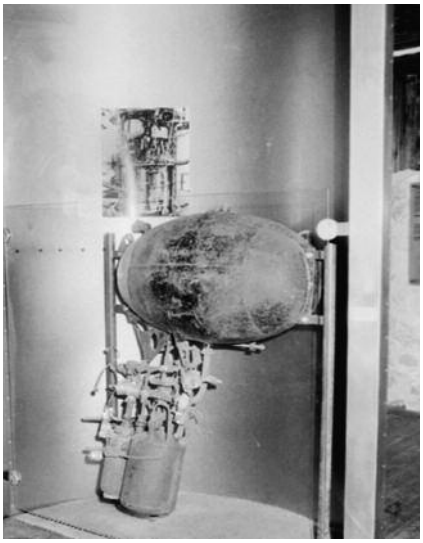
A 'Dora' war crimes trial was held before a US Military Court at Dachau in 1947. On trial stood only one civilian, General Director Georg Rickhey (who was acquitted), and 18 SS officers and guards. After that, the records of the trial and the preceding investigation were classified and would remain secret for over 30 years. This was to suppress the embarrassing truth that some of the German scientists whom the Americans had brought to the US and who were to pioneer the American space programme — men like Arthur Rudolph, Mittelwerk's plant manager and chief clerk, and later project director of NASA's Saturn 5 project — had been closely involved with 'Dora-Mittelbau'. (Rudolph only came up for prosecution in 1978 after US President Jimmy Carter had created the Office of Special Investigation to prosecute Nazi war criminals living in the US; in 1983, before he could be charged, Rudolph relinquished US citizenship and returned to Germany. He died in 1996.)

In the post-war world, Nordhausen and the Kohnstein became part of East Germany. The 'Dora' camp site was made a memorial by the local GDR authorities, the area around the crematorium being landscaped and a bronze sculpture being dedicated in front of it in 1964. In 1973, the site became an official GDR Mahn- und Gedenkstätte (Remembrance and Memorial Site) and a museum exhibition was opened in the crematorium building. Many state-organised, anti-Fascist mass meetings were held here, but few people from the West managed to visit it. (When After the Battle first asked to visit and photograph the site back in 1973, the request was refused on the grounds that the location was 'a border area'.)

For over four decades, the underground tunnels of the Mittelwerk remained inaccessible (except for the occasional adventurous souvenir-hunter who illegally and riskily climbed down the air shafts). Only Tunnels C and D (of the never-finished project B-12) on the north-east side of the Kohnstein were re-opened in 1965-66 and made into cold-storage warehouses for vegetables and fruit. Meanwhile, the gypsum quarry at Niedersachswerfen, restarted by the Russians in 1945 and continued as the Leuna-Werke 'Walther Ulbricht' by the GDR since 1953, nibbled away at the Kohnstein. By 1990, quarrying had taken away nearly all of what had once been project B-11 and almost reached Tunnel A between galleries 40-44.

The memorial wall erected beside the Appellplatz in GDR times.

The new tunnel, dug in 1988-95 to enable visitors to enter Tunnel A.



V2 'T-Stoff' container recovered from the Kohnstein and now at the new museum.

With the German re-unification of 1990, the Gedenkstätte Mittelbau-Dora, like the other camp memorials in the former GDR, was faced with a thorough reorganisation and overhaul of its conception. Meanwhile, the threat to the tunnel system grew as the gypsum factory, now taken over by a West-German owner, accellerated quarrying even more. It was only lifted in June 1991, when the state of Thuringia declared the tunnels a protected historical site. In 1992, the exhibition in the crematorium was removed, both because it was too one-sided and in order to restore the building's authentic appearance. Since 1991, large parts of the actual camp, which the GDR authorities had allowed to disappear under bushes and trees, were cleared, laying bare the foundations of nearly every hut and building. On one of these, an original camp hut was rebuilt; this was used to house a new and more-balanced exhibition which was opened on April 11, 1995 — the 50th anniversary of the camp's liberation. Other memorials erected by the GDR were left in place.

At the same time, work was in progress to make at least a part of the underground galleries accessible to visitors. For that purpose, a new 180-metre-long tunnel was dug from just next to the southern entrance to Tunnel B, giving access to a 100-metre stretch of Tunnel A and views of Gallery 46, one of those where in 1943 several thousand inmates subsisted and later V1s were assembled. The tunnels can only be visited as part of conducted tours given by the Memorial staff. In 1995, there were over 100,000 visitors. All galleries are in a state of total chaos and destruction — the result of dismantling, demolition and erosion — and partly flooded by ground water. In the dark, damp tunnels, between the debris and rocks, lie the rusty remains of machinery, equipment and the sinister remains of once-secret weapons — macabre memorials to the suffering that took place here.

KZ-Gedenkstätte Mittelbau-Dora. Open daily, 10 a.m.-6 p.m. (10 a.m.-4 p.m. from October 1 to March 31). Guided tours Tuesday to Friday at 11 a.m and 2 p.m. Applications by phone: 03631-983636/fax: 03631-990181. The Gedenkstätte has its own documentation centre, library, research department, publication series, and seminar days.

In April 1995, a spectacular recovery operation took place when a complete turbo section of a V2, which had been located the previous September, was raised from the water in Gallery 29 to be displayed at a special exhibition on Nazi rocket scientists at the Technik-Museum in Berlin. (Technik-Museum)

THE SINKING OF THE *BLÜCHER*

By Major T. G. W. Potts

An observer standing at the entrance to Oslo Fjord on the night of April 8, 1940 might have caught sight of a procession of blacked-out warships proceeding in a northerly direction towards the Norwegian capital Oslo. These comprised Germany's Warship Group 5 and, as part of Operation 'Weserübung', they were to reach the narrows outside Oslo at 0400 hours on the 9th and effect an immediate surprise landing at the capital shortly afterwards. Leading the column was Hitler's brand new heavy cruiser *Blücher* (the flagship of Konteradmiral Oskar Kummetz) which only ten days earlier had been undergoing trials and receiving last minute improvements and modifications. Her crew was not fully trained or worked up and she was included in the operation despite the opposition of the Commander-in-Chief of the Kriegsmarine, Grossadmiral Erich Raeder. *Blücher* was about the size of HMS *Belfast,* the museum ship moored in the River Thames, having a displacement of about 12,000 tons.

She was followed by Germany's only serviceable pocket battleship *Lützow* (formerly named *Deutschland*) which was also taking part despite Raeder's objections as he wanted her to begin distant ocean raiding after further repairs. She also displaced about 12,000 tons.

She was followed in turn by the light cruiser *Emden* (5,600 tons), three torpedo boats, eight motor minesweepers and various other support vessels. In addition to their normal crews, the German squadron also carried 2,000 soldiers, some motor transport, and administrative personnel for the running of Norway, including a detachment of Gestapo. Thus, the heavy ships were seriously overloaded with men. The German plan was to capture all Norway's major ports simultaneously on the morning of April 9 without a prior declaration of war. In his Decree for the Execution of 'Weserübung' Raeder wrote:

'The Führer and Supreme Commander, in order to ensure vital German interests, has imposed upon the Wehrmacht a task, the success of which is of decisive importance to the war.

'The execution and protection of the landing operations by the Kriegsmarine will take place mainly in an area in which not Germany, but England with her superior naval forces, is able to exercise control of the sea. In spite of this we must succeed, and we will, if every leader is conscious of the greatness of his task and makes a supreme effort to reach the objective assigned to him.

'It is impossible to anticipate the course of events and the situations which may arise locally. Experience shows that luck and success are on the side of him who is eager to discharge his responsibilities with boldness, tenacity and skill.

'The pre-requisite for the success of the operation are surprise and rapid action. I expect the senior officer of every group and every commanding officer to be governed by an inflexible determination to reach the port assigned to him in the face of any difficulty that may arise. I expect them to enter the ports of disembarkation with the utmost resolution, not allowing themselves to be deterred by the holding and defence measures of the local commanders, nor by guard ships and coastal fortifications.

'Any attempt to check or hinder the advance of our forces must be repulsed. Resistance is to be broken ruthlessly in accordance with the directives in the operational orders.'

Thus, surprise was to take the place of sustained sea-power and the orthodox principles of war were to be violated. If they could get away with it, the Germans wanted the invasion to seem like a peaceful occupation. Any opposition was to be ruthlessly broken, as the Norwegians forces found out. Norway had been at peace for over a century. She had only a small and largely obsolete navy. The principal Norwegian warship at the mouth of the fjord was the minelayer *Olav Tryggvason,* supported by two minesweepers. The Germans planned to trick the defenders with a false message: 'Am putting in with permission of Norwegian Government. Escorting officer on board'. However, *Lützow's* radio operator intercepted a Norwegian Admiralty radio message: 'Douse all lights forthwith!' The lighthouses in Oslo fjord started to go out. Thus, the Germans had lost the key element of surprise at the start of the operation.

The heavy cruiser *Blücher* (*top*), built by Deutsche Werke at Kiel, was launched on June 8, 1937. She was the sister ship to the *Admiral Hipper* launched at Hamburg four months earlier. The *Blücher* was commissioned on September 20, 1939 being sunk in Operation 'Weserübung' in April 1940. (IWM) *Above*: **Major Tom Potts, our author, pictured with one of the two 28cm (11-inch) guns which helped send her to the bottom. Ironically, they were constructed in the German Krupp factory in Essen!**

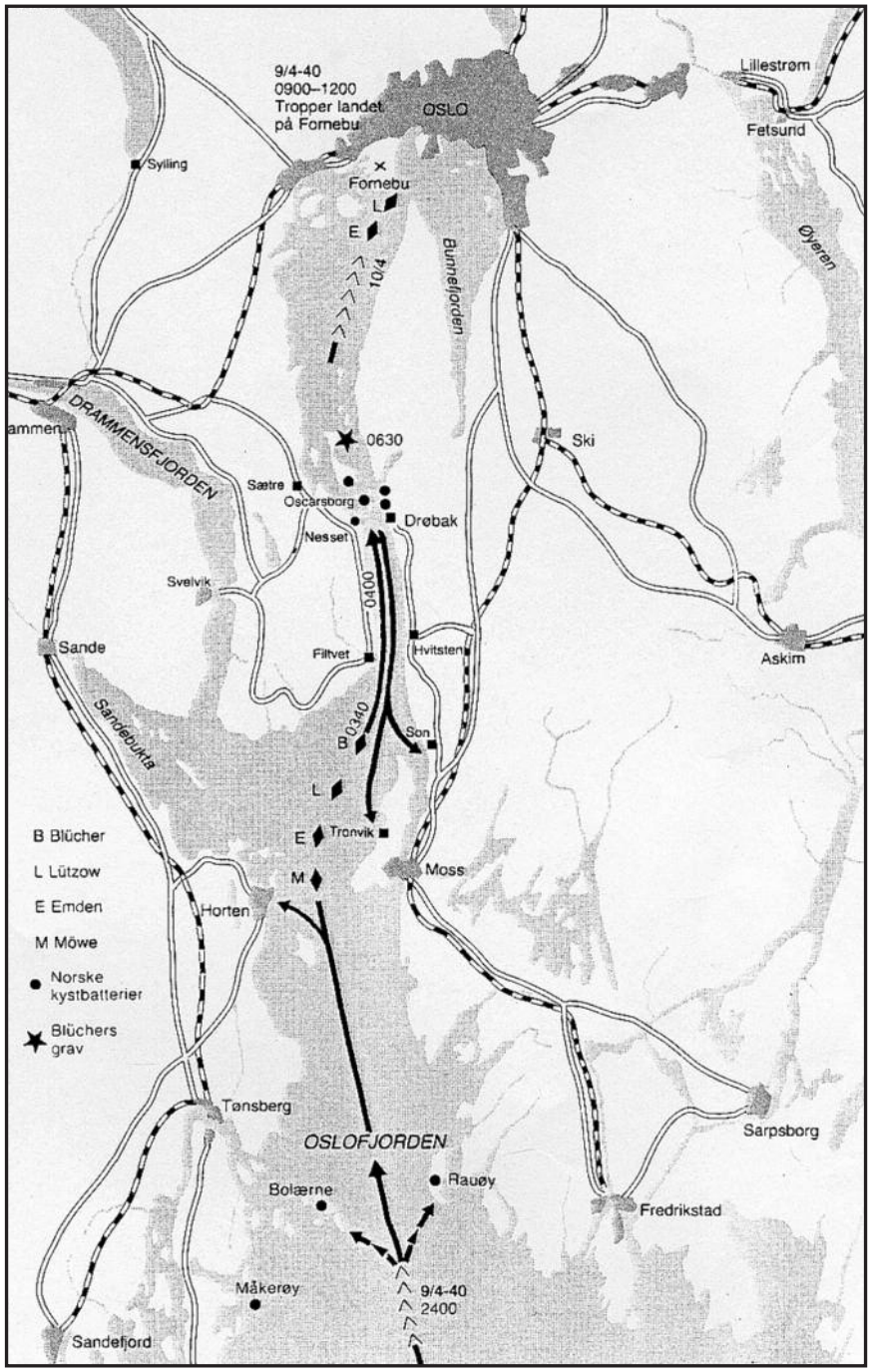
A small Norwegian patrol boat *Pol III,* a 214-ton whaler mounting a single gun, raised the alarm at 2306 hours firing warning shots and attempting to ram the German torpedo boat *Albatros,* having called upon it to surrender. A German officer ordered his men to 'take care of it'. The Germans opened fire and a shell cut off both legs of the brave skipper, Leif Welding Olsen. Mr Churchill wrote in *The Gathering Storm:* 'The armed Norwegian whaler went into action at once without special orders against the invaders. Her gun was smashed and the commander had both legs shot off. To avoid unnerving his men he rolled himself overboard and died nobly.' Fourteen Norwegians were rescued from the *Pol III* to become the first prisoners of the campaign.

The *Lützow's* commander, Kapitän zur See August 'Curry' Thiele, suggested to Admiral Kummetz in the *Blücher* that as surprise had been lost, the squadron should proceed up the fjord at a faster speed before all the lighthouses were doused but the admiral insisted on adhering strictly to his orders. He planned to maintain the fiction of peaceful occupation and to land at the harbour in Oslo at about 0500 hours The first of the soldiers would then race to the royal palace and take King Haakon II into custody. To preserve the pretence of a friendly occupation, the King would be serenaded by a Wehrmacht band which was included in the invading forces.

From the German point of view, the most dangerous point in the trip north to Oslo was likely to be at the Drobak Narrows, where the width of the seaway is reduced to about 600 yards. Defending the narrows was the very elderly fortress of Oscarsborg, situated on South Kaholmen Island in the middle of the fjord, about ten miles south of the capital. Oscarsborg fortress is named after the Swedish King Oscar, who christened it in 1855, when Sweden ruled Norway. It still looks substantially the same today as it did in 1940 and, indeed, in 1855. Everything depended on whether the defenders of Oscarsborg could stop the invaders. The main armament of the *Blücher* was eight 20.3cm (8-inch) guns and twelve 10.5cm (4-inch) guns while the pocket battleship *Lützow* had a main battery of six 28cm (11-inch) guns. The Norwegian artillery in their principal fortress consisted of three 28cm (11-inch) guns made by Krupp in 1892. These were known as Josva (Joseph), Moses and Aron (Aaron), Joseph being so named because, on being unloaded nearly half a century before, it had been dropped in the water! The three guns were manually operated and had no protective cover. Each had a built-in manually operated crane to enable the 600lb shells to be lifted up to the breach of the guns. The rate of fire would have been one round every four or five minutes.

On the eastern side of the fjord, on the mainland north of Drobak village were situated three 15cm (6-inch) guns based at Husvik and two 57mm (6-pdr) guns on the foreshore. There was another battery on the western side of the fjord at Nesit. This took no part in the action.

The defences at Oscarsborg were the last significant defences before Oslo. How would the defenders react? They were seriously handicapped because successive Norwegian governments had allowed the defences to run down to an unbelievable extent. The garrison commander, Colonel Birger Kr Eriksen, already warned of an impending attack, lacked even the minimum number of men to crew the three serviceable 28cm Krupp guns. All he could muster to fight a night action against a moving target on a dark and misty night were two sergeants and 23 young trainees, some of whom had only served for nine days. Thus, he could only man two of the three serviceable heavy guns. His other soldiers, officer cadets, were sent in the middle of the night to man the batteries on the eastern side of the fjord.



Schematic of the voyage up Oslo Fjord on the night of April 8, 1940. [B] *Blücher.* [L] *Lützow.* The latter was the first of Germany's new breed of 'pocket battleships' which cleverly circumvented the tonnage restrictions on new capital ships as laid down in the Treaty of Versailles. Launched in May 1931 and christened *Deutschland,* in January 1940, she was confusingly renamed *Lützow,* the same name as a heavy cruiser launched in July 1939 and sold to the USSR in 1940. [E] *Emden,* a light cruiser dating from 1925. [M] Möwe, a torpedo boat constructed in the mid-1920s. [●] Marks the positions of the Norwegian coastal batteries. [✶] *Blücher's* sinking position.

The Norwegians stationed two small patrol boats immediately south of Oscarsborg to warn the defenders of the approach of the hostile squadron. Admiral Kummetz adhered strictly to his orders and, without any escorting warships ahead, steered straight for the narrows in an attempt to bluff the defenders. A searchlight lit up the *Blücher.* Colonel Eriksen, the fortress commander, gave the order to open fire on his own initiative when the *Blücher* was at a range of about 1,500 yards.

Against a moving target the Norwegians must have known that they only had time to fire one round from each gun. By the time the gunners actually fired, the target was considerably closer, perhaps as close as 500 to 1,000 yards. Both rounds were hits, although, because of the reduced range, higher up the target than intended. Nevertheless, the two heavy shells had a devastating effect. The *Blücher* had an aircraft hangar designed to hold Arado Ar 196 seaplanes. They were full of petrol. There was also some motor transport aboard. A direct hit on the hangar set the petrol on fire. The second shell flew over the bridge and struck the foretop, killing the anti-aircraft commander, Kapitänleutnant Hans-Erik Pochhammer, and those around him.

The *Blücher* in her death throes. As the burning ship reached the narrows to the north-east of Oscarsborg fortress on the morning of April 9, she was struck by two torpedoes and started to founder.

The captain of the *Blücher,* Kapitän Heinrich Woldag, ordered full speed ahead. However, owing to the damage it had received, the cruiser started to turn in a circle and so the captain could only steer her through the narrow channel by varying the revolutions of the propellers. The guns on the eastern side of the fjord opened up, causing further damage. The *Blücher* was already doomed because the inexperienced crew were unable to extinguish the fire amidships.

About half a mile north of Oscarsborg fortress lies the neighbouring small island of North Kaholmen where the Norwegian navy had positioned a torpedo battery manned by two officers and nine sailors. At a few hundred yards range, they fired two Whitehead 50cm (20-inch) torpedoes at the *Blücher.* By a quirk of fate, the torpedoes had only just been overhauled, and they ran very true indeed and at 0521 hours two dull explosions shook the ship, ripping open the port side. The *Blücher* immediately began to founder as water poured in and her turbines stopped. Meanwhile, the fire in the hangar got worse. As the ship was drifting on to the rocks on the side of the fjord, an order was given to drop an anchor. At 0630, there was a large explosion as a magazine blew up. A great column of smoke shot into the sky. By 0700, the stricken warship had developed a 45 degree list and she soon lay on her side. At 0731 hours she sank beneath the surface and subsequently there was a further explosion and flames could be seen under the water.

The ship had only one small boat useable as a lifeboat which was used to transport wounded to the shore, but the bulk of the 2,500 crew and passengers who survived were faced with having to swim the 400 or 500 yards, either to the eastern shore or to a small island in the middle of the fjord. The water was freezing. The danger to the survivors was increased by burning oil which spread over the water threatening to engulf them. In all, about 1,000 Germans lost their lives.

The rest of the German squadron was cut off from the *Blücher* by the fire of the defenders and they were not immediately aware of what had happened to the cruiser. Kapitän Thiele in the *Lützow* took command. His ship had also received some damage. He deemed it impossible to break through the narrows and he led the rest of the squadron off to the south. In the gathering daylight, the garrison at Oscarsborg could see Junkers Ju 52 transport planes flying up the fjord to land at Oslo. However, there was nothing they could do about it as the only anti-aircraft weapons they had available were a couple of machine guns on an island near the fortress and two Bofors guns on the eastern side of the fjord. There was no prospect of any air support for the Norwegian Air Force which was grossly outnumbered by the Luftwaffe.

During the daylight hours on April 9, the garrison on Oscarsborg was repeatedly bombed from the air and about 500 bombs of 50kg (110lbs) and 250kg (550lbs) were dropped on them. All they could do was seek refuge in the fortifications. Astonishingly, no

Old Norwegian coast artillery gunners never die — they only meet on a Thursday! (Tom forgot to ask why but see *After the Battle* No. 95.) L–R: Ole Slaake, Per Halvorsen, Magnar Thorvardsen, Magne Lundby, Alf Stafne, Arnold Lange, Ragnar Toensberg. In the background on the left is Oscarsborg and on the right Kaholmen Island. Tom Potts is indebted to these gentlemen for their help.

Having been ripped by shell-fire and slammed by two torpedoes, the *Blücher* was doomed. At 6.30 a.m., her magazine blew up sending a huge column of smoke skywards. She then lay on her side for an hour before disappearing from sight beneath the surface of the fjord which at that point is around 50 fathoms deep.

significant damage was inflicted on the fortress by either the German navy or air force and no Norwegians were injured.
The Kriegsmarine returned to the fray at 1417 hours when the *Lützow* opened fire on Oscarsborg with her 28cm guns. Under cover of this fire, a small patrol boat passed through the Narrows unscathed and then reported by radio: '*Blücher* sunk off Askholmen. Probably two torpedo hits. Part of crew on Askholmen and mainland.'
Kapitän Thiele was not prepared to hazard the *Lützow* by attempting to force the Drobak narrows himself so he sent a boat under a white flag to Oscarsborg. A Norwegian vessel came out from the island to meet it. Terms of surrender were negotiated in writing. These included the clause that 'it is agreed that the brave defenders of the fortress may hoist the Norwegian flag next to the German flag'. At 0900 hours on April 10, the two flags were hoisted and *Lützow* and *Emden* sailed on northwards into Oslo harbour, where they arrived 30 hours late. King Haakon and his cabinet had left for central Norway at 0720 hours the day before and were thus able to continue the war. In the British Official History of the Second World War, the author wrote: 'But the important fact is that Oslo, unlike the other ports, was not firmly in German hands during the vital period of the morning of the 9th. Had it been, the Government could not have organised resistance and the success of the German coup would have been complete.'
The continuance of Norway in the war was of considerable importance to the Allies. At the time, the Norwegian mercantile marine was the fourth largest in the world and Norwegian ships were able to play a valuable role in the Battle of the Atlantic which Churchill admitted was the battle that worried him most. The 20-minute battle at Oscarsborg was Norway's biggest victory in the invasion of 1940.

Bomb splinter marks remain on one of the doorways at Oscarsborg. Among the aircraft which attacked the fortress were 22 Stukas from Gruppe 1/StG1, based at Kiel-Holtenau, which bombed at 1059 hours on April 9.

Hundreds of German sailors lost their lives when she sank and today the wreck is consecrated as a war grave. More succumbed trying to swim ashore in the freezing waters covered in burning oil, and the final death toll was around a thousand, including senior officers earmarked for appointments in the German administration in Oslo and members of the Gestapo. These lucky survivors have made themselves improvised shoes, one of the golden rules of surviving a sinking vessel being to discard footwear to aid swimming.

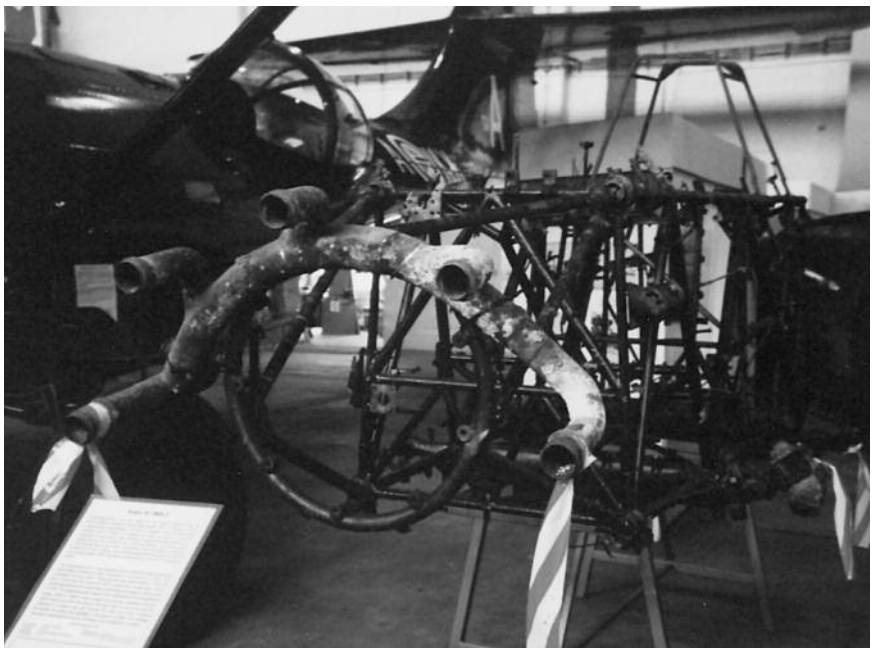
The Germans erected a memorial to their fellow-crewmen but the Norwegians removed it after the war.

The Norwegian memorial in the mid-19th century Oscarsborg fortress to Colonel Birger Eriksen, the commander in 1940.

The Blücher still lies where she sank at the bottom of the fjord off Haoya Island, about 3,000 yards north of Oscarsborg. Norwegian fjords are deep and the bow is at a depth of about 300 feet and the stern at around 200 feet. Big ocean liners sail past her every day on their way to Oslo but undoubtedly most of those on board do not appreciate the significance of the spot. In 1994, the Norwegians instituted an operation to extract fuel oil trapped in the wreck which was seeping into the water and damaging the environment. Contractors drilled a hole through the hull of the wreck and recovered about 1,100 tons of oil. More interestingly, the salvagers discovered on the bottom of the fjord, about 100 yards from the Blücher, *the battered remains of an Ar 196 floatplane which had broken away from the ship, presumably as she sank. This was salvaged and is now on display at the aeronautical museum at Stavanger/Sola aerodrome in central Norway. This is open every day from June 2 to mid-August and on every Sunday from 1200 to 1600 hours from May to November. The museum is situated in a World War II naval seaplane hangar (at the far end as viewed from Stavanger aerodrome where the passenger aircraft land). Its address is Flyhistorisk Museum Sola, Postboks 512 N-4055, Stavanger Lufthavn, Norway. The airport bus will drop passengers outside.*

The museum includes a surprising range of aircraft, including a rare Arado Ar 96 B-1 trainer which landed in a fresh-water lake on March 13, 1943, and was salvaged in September 1992. It is now being restored. Also being meticulously restored is Messerschmitt Bf 109 G - 1/R2 Werke No. 14141 of 2/JG5. This aircraft crashed into the sea following engine failure in late 1943. In November 1988, a shrimp trawler inadvertently salvaged the wreck at a depth of about 900 feet. It is being restored by volunteers under the leadership of a professional aeronautical engineer, Kjell Naas.

Oscarsborg fortress remains as it was at the end of the war and even some bomb-splinter marks on the brickwork remain. The heavy guns that hit the Blücher *are still in position. The little town of Drobak is about a 45-minute bus journey from Oslo and the 541 bus can be caught from a bus stop about 300 yards from the Central Bus Station on the opposite side of the road. The Royal Norwegian Navy runs a small tender which does the short journey from Drobak to the fortress on the island opposite, which is still a military base. There are conducted tours of the Oscarsborg Coastal Artillery Museum during the short summer months only. The Drobak area has two good hotels. The tourist office at Oslo airport is helpful. Even the bus drivers speak English.*



The wreckage of the *Blücher*'s Arado Ar 196 seaplane was salvaged from the bottom of the fjord a few years ago and can now be seen in the museum at Stavanger in central Norway.

Then . . . and now . . . but between these two photographs lies a mountain of red tape as your former Editor strove to have headstones erected on the unmarked graves of men killed in the explosions at Waltham Abbey in 1940. The administration of the Royal Gunpowder Factory (RGPF) purchased the grave plot but then failed in their duty to mark the last resting place of their six employees. Wherever we have come across civilian graves which should be rightfully marked, we have tried to ensure that this is done, favouring the Commonwealth War Graves Commission style of headstone but with the two corners notched to denote that it does not mark a military grave. In this case, the former grave owner — the RGPF — had ceased to exist and responsibility for maintaining its obligations had not been defined. Thus we spent the best part of two years trying to find a civil servant with the courage to say 'yes'. In the end, that man turned out to be Stuart Fox, the Deputy Defence Land Agent East, and his approval was given on January 30, 1998. With the anniversary of the first deaths having already passed, the next date for the ceremony was April 20.

ROYAL GUNPOWDER FACTORY SEQUEL

By Bryn Elliott

Two years ago, in *After the Battle No. 93*, I recounted the story of the deaths of ten men at the Royal Gunpowder Factory (RGPF) at Waltham Abbey during the early months of 1940. Theirs was an instant death, being killed by the explosion of thousands of pounds of volatile mix they were processing in what was then the only Government-owned gunpowder factory serving the war effort.

As the research into the story unfolded, it soon became clear that the remains of six of the dead lay together in adjoining unmarked graves in the war graves section of the New Cemetery in Sewardstone Road. Such was the manner of their deaths that the scant remains of the six were easily contained within two caskets. We included a picture of the bare area of grass where the remains of Albert Lawrence, Charles Purkis and John Parkes from the first explosion in January and Thomas Galvin, Francis Keene and David Lewis from the April explosion lay.

As soon as he saw that the graves were unmarked, the Editor of *After the Battle,* Winston Ramsey, expressed a desire to 'do the right thing' and mark the graves even though some 56 years had passed since the men were originally laid to rest. Any sense of disbelief I may have had was dispelled by the precedents that I was made aware of as the graves of the first civilian to be killed in the London Civil Defence Region — Jim Roberts, a fireman in Loughton, and the last civilian to die in the war Ivy Millichamp, a housewife in Orpington — had been marked thanks to the efforts of *After the Battle*. It was a project to be taken seriously and to which I wholeheartedly concurred.

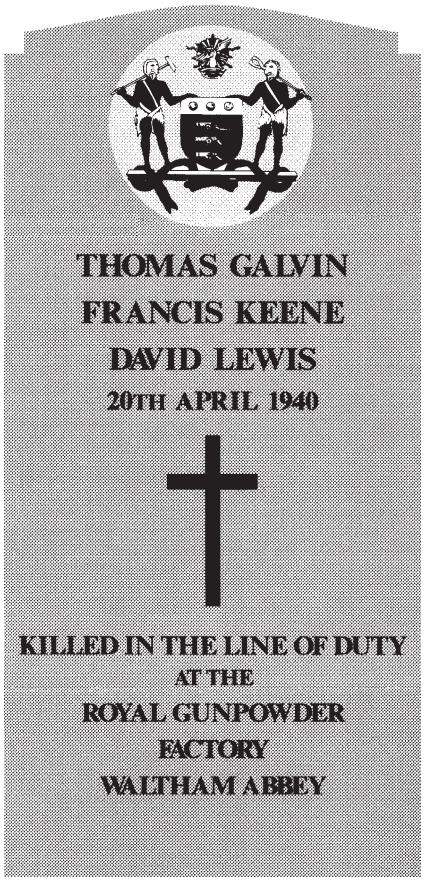
It was agreed that the form of headstone should be that adopted by the Commonwealth War Graves Commission for non-combatants. However, the deed was to be far more difficult to realise than the intention. The crest of the Board of Ordnance, the section of the Ministry of Supply responsible for the RGPF at the time, was chosen for the badge and wording set out with characteristic corner notches to denote civilians. The Editor approached his favourite stonemasons, F. Masters in Woodbridge, Suffolk, with the design and then set about seeking permission to place them on the graves.

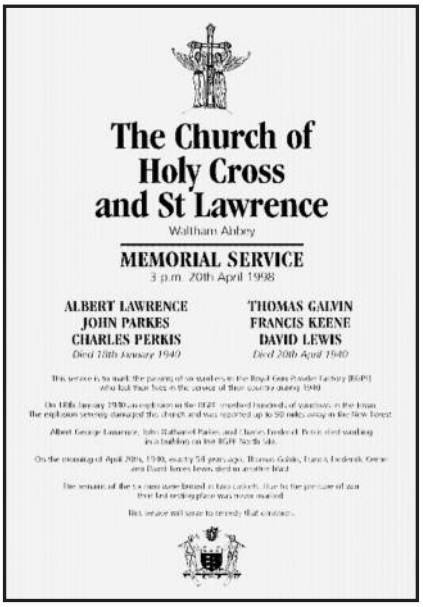
The problems affecting this seemingly simple task were deeply bound by red tape. The current owners of the graveyard, the Waltham Abbey Town Council, were approached for permission and they acceded providing a signature could be obtained from the owner of the graves, the Superintendent of the Royal Gunpowder Factory, or his successors.

A relatively ancient title, there has not been a Superintendent of the RGPF for many years and neither the Board of Ordnance nor Ministry of Supply exist or have a clearly-defined natural successor. The road to tracing the legal owner of the graves proved long and arduous. Being civilian war dead, the charter of the Commonwealth War Graves Commission did not give it the power to intervene, and Royal Ordnance (which took over the factory site only to promptly close it) drew a negative reply. An appeal to the Chairman of their parent company, British Aerospace, also fell on stony ground.

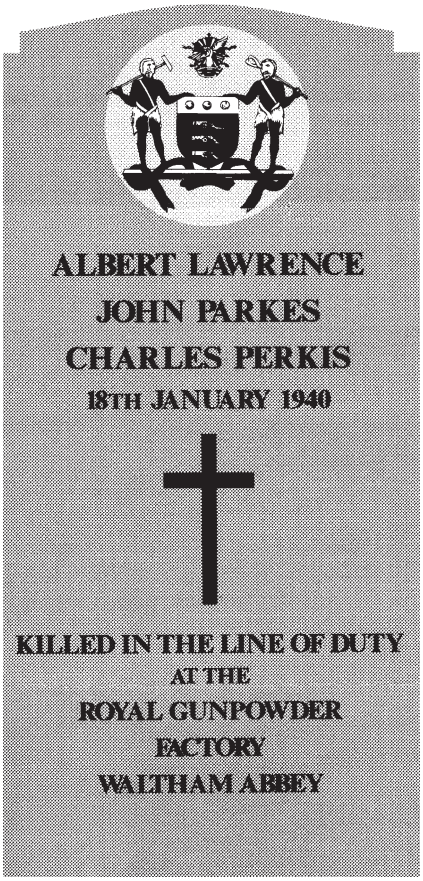
Nevertheless, any thoughts of abandoning the task were set aside when it was discovered that through an error in communication, the monumental mason telephoned the Editor and asked him when he wanted the completed stones delivered! Some would say it was a sign.

The former RGPF was finally closed for all explosive-related activities on June 30, 1991. The 190 acres of North Site, where the 1940 explosions took place, remained in the hands of the Government as the Royal Armament Research and Development Establishment. Plans later put in hand to create a heritage centre telling the story of the explosive industry led to the Ministry of Defence placing the site and its future in the hands of a locally formed Trust Steering Committee. It was the latter that was to become an avenue to resolving the impasse.





The design for each headstone had been drawn up incorporating the crest of the Board of Ordnance. The inscription was then cut by Hilary Wells of F. Masters of Woodbridge, Suffolk, who had previously inscribed the stone for Ivy Millichamp (see *The Blitz Then and Now*, Volume 3, page 586). Once the go-ahead had been given, Andy Mansfield and I drew up an Order of Service with the Reverend Canon Patrick Hobson to be held in the Abbey church.



Having failed to gain the interest of transitional bodies — the Prince Organisation and Civix — it was a matter of awaiting the formation of the Trust itself. As plans for the future of the site hardened, those involved in its development came to notice and were approached with a request for assistance early in 1998. It was fortunate that Don Spinks, the recently appointed Chairman of the Royal Gunpowder Mills Trust, was already known to both the Editor and myself, thus removing many of the formalities of introduction.

Within a matter of days, Don, a former local Councillor and East London businessman, had managed to track down Stuart Fox, the Deputy Defence Land Agent East working with the Ministry of Defence in Waterbeach, Cambridgeshire. It then became clear that the Defence Estate Organisation was, unknowingly, the place we had sought from the beginning!

Stuart gave us the usual bad news in confirming that there was no actual successor to the Superintendent of the RGPF. However, by the end of January he courageously announced that he was quite prepared to sign the necessary piece of paper to allow the overdue marking of the graves to take place.

Armed with the all-important signature, events moved swiftly and an enthusiastic alliance was formed between *After the Battle*, Waltham Abbey Royal Gunpowder Mills and the Church to bring the project to fruition.

It was immediately obvious that although the anniversary of the January explosion had passed, it might be possible to hold a ceremony on the 58th anniversary of the second explosion, April 20, 1998. The intervening two months might just allow enough time to trace as many of the relatives of the dead as possible in order that they might be invited. Although the families had been traced in 1996, it was known that each of the six men were not local, most hailing from Enfield. With the assistance of the local newspapers, several previously unidentified relatives, who were wholly unaware of what was proposed, were traced.

By April 20, it had been possible to trace representatives for Lawrence, Parkes and Purkis as well as those of three of the four men who already lay in marked graves. The relatives of Kelman, Monk and Raby were enthusiastic in their wish also to be present when the graves of the six were marked. Most of the relatives were the children or cousins, but it was gratifying to know that Mrs Kelman and Mrs Raby were both well, although each had remarried.

It transpired that the relatives of Purkis had spent over 20 years attempting to get it marked as a war grave. They too were met by official intransigence, complicated by the fact that three families were involved, before finally giving up in their attempt in the 1980s. That information alone made the effort worthwhile.

There were only five of us present, including the original *After the Battle* team, when on April 17, an appropriately damp, grey and cold day, the stones were delivered and set in place by Stephen Haste from Woodbridge alongside the existing war graves.

On a cold Friday, April 17, Stephen Haste of Masters carefully erected each headstone in its concrete beam.

In contrast, over 50 people were drawn to the Church of Holy Cross and St Lawrence on the afternoon of Monday, April 20, 1998. In the magnificent surroundings of a parish church which is the last vestige of the final monastery to be dissolved by Henry VIII over 450 years earlier — and still known simply as the Abbey church — the six were remembered. The church had itself been severely damaged in the first series of explosions in January 1940.

The very moving memorial service and address was led by the incumbent of the Abbey, the Reverend Canon Patrick Hobson, MC, MA. Patrick by chance, served in an armaments factory as a boy and, as a second lieutenant with the King's Regiment in Korea during his National Service. During that war he earned a Military Cross in circumstances he chooses to keep private. His calling to the Ministry came later in life.

The group then moved on to the cemetery in reasonable weather where the new stones were blessed and, much to the delight of the relatives of Monk and Raby, a short visit was made to the two existing marked graves nearby.

The Royal Gunpowder Mills are now owned by a charitable trust which, with the grant of over £6 million from the Lottery Fund, is developing the site as a heritage resource to open in the year 2000.

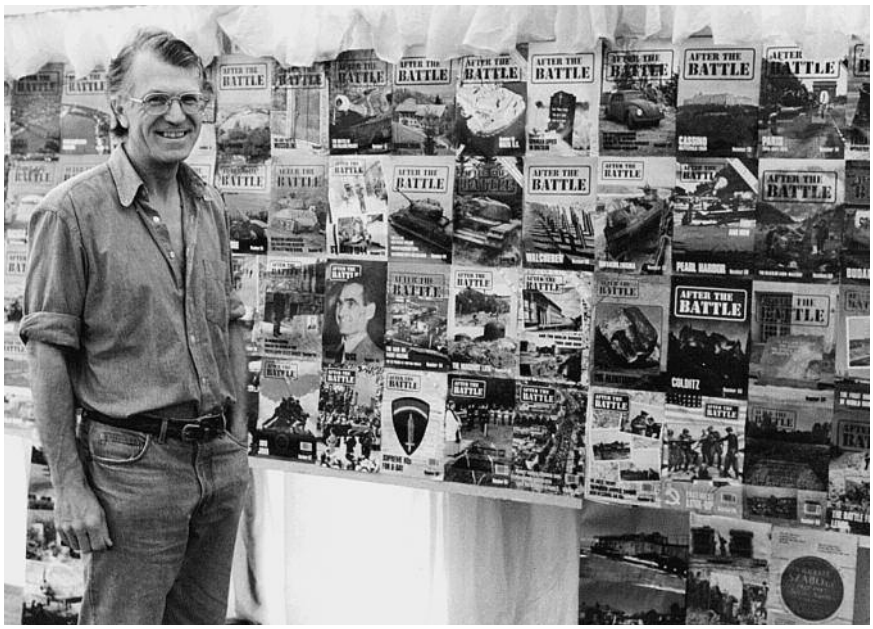
From your new Editor

In the final paragraph of our last issue, No. 100, Winston Ramsey announced that he would hand over Editorship of *After the Battle* to me, Karel Margry. Having been a reader since No. 1, a contributor since No. 56, and Winston's European Editor since No. 76, I feel very honoured to have been chosen to take over the reins from him.

The official hand-over took place on Saturday, May 16, 1998, at a party hosted by Winston and his wife Jennifer at their beautiful home near Harlow, to mark and celebrate the publication of Winston's literary milestone, the 100th edition of *After the Battle*.

The party gave Winston an opportunity to realise a long-cherished idea, namely to bring together as many as possible of the people who in one way or another had contributed to the making of *After the Battle* in the past 25 years: authors, researchers, indexers, company staff, travel companions, fellow-editors, and other 'friends of *ATB*'. Coming as they do from countries all over the world, and representing many different languages, Winston cherished the idea of the Babylonian confusion of tongues that would ensue. 'I will ask them all in one room, lock the door behind them, and see what happens', he told me several times with glee in his eyes. (In the event, it was gloriously sunny all day, so most of the party took place outdoors and in a giant marquee which had been erected in the garden, with all the foreign guests foiling his plan by merrily talking English all day!)

Winston had arranged several period features to indicate the party's link to history. Displayed in the garden was Alan Holland's Jeep LHK 534, which had featured on the covers of both issues 1 and 100, thus encompassing the 25-year time span of the magazine. Guests were welcomed by Winston Churchill look-alike Joe Mahoney. Music of the Glenn Miller repertoire was provided by Ted Higgins' Opus One Big Band, with Heather Carmel performing Vera Lynn songs. Later in the day, George Kimmins added to the historic setting by appearing as Lieutenant General George S. Patton.



After a 25-year stint at the helm, Winston Ramsey *(above)* handed over Editorship of *After the Battle* to Karel Margry of the Netherlands, seen *(top* right*)* with Jean Paul Pallud our long-standing author from France, as they prepare for the celebration held at Harlow on May 16. A marquee had been provided to ensure against the vagaries of the English weather with a central display of the covers of the first 100 issues.

Alan Holland of High Wycombe brought over his beautifully restored Jeep which Winston had used to produce the first issue of *ATB* way back in 1973.

To add period atmosphere, guests had their photos taken with 'Winston Churchill', alias Joe Mahoney. Don Marshall plays himself!

More than 150 guests attended the party, from far and near. Most originated from Britain, but others had travelled around the globe to be present. Don Marshall, our Iwo Jima marine veteran, had flown in from the US, as had Marty Black; Brian Taylor, the indexer of our first bound volumes, had come all the way from Zimbabwe and Philip Bradley from Australia. Others, who were unable to come, sent in taped greetings to be present in spirit: David Green from Australia; Laurie Goldstraw from Trinidad, Tony Le Tissier from Berlin; John Cleave from Washington; and Charlie Leonard, our Okinawa marine veteran, from California. Many others sent letters of greeting.

All those present at the party shared having contributed to *After the Battle*, but few of them had met in person before. The No. 100 Party was unique in that it gave people the opportunity to finally put faces to names. As each guest had been provided with a badge which listed not only his name but also what he had written or done for *After the Battle*, recognition in the field was made very easy. Even Winston and Jennifer saw several contributors for the first time. The day was filled with swapping stories about battlefield visits, the vagaries of taking comparisons, and possible future stories for the magazine.

The Prime Minister enjoyed talking over old times with Roger Freeman *(left),* the noted historian of Eighth Air Force fame, and *(right)* having his blood pressure checked by Marianne Fredericks (see issue 96).

Guests were badged up on arrival to give not only their name but their accomplishments for *ATB*. *Left:* Ian Galbraith (issue 86 on the capture of Boulogne) and Keith Braybrooke (contributor of the Debden chapter in *The Battle of Britain Then and Now)*. *Right:* Our Barbara labels up Major Tom Potts who contributed an article to No. 95 as well as the story included in this issue.

Above: **Alan Hall, centre, the former Editor of *Aviation News* who established the design criteria for *ATB,* with Andrew Holmwood our ex-sub-editor, left, and David Davies, right, founder of the Batterie Todt Museum at Wissant (see issues 23 and 78). With back to camera: Gordon Ramsey who left *ATB* in 1997 to set up his own mail order business selling battlefield relics.** *Left:* **Gordon's competition 'Guess the Relic' was won jointly by Phillip Bradley from Australia (forthcoming story on Shaggy Ridge) and Bill King, Chairman of the Ridgeway Military Aviation Research Group.**

A lavish buffet was followed at 5 p.m. by tea and cakes during which Winston entertained the audience with tales from 25 years of *After the Battle*, inviting several guests to add to this by telling their part of the stories. At the end of this, he handed the microphone over to me — I guess this was the moment I assumed Editorship.

I am sure that many of our readers will want to know whether the change of Editor will mean a change in the magazine. Indeed, newly-appointed publication editors usually feel an urge to introduce all kinds of alterations, either in design or content. However, our fans can rest assured. One of the things I, and many readers with me, like about the magazine is its continuity. The style and format of the magazine, established by Winston 25 years ago, has been tried and proven and is obviously liked by our readers, and I see no reason to change any of them. All I aim for is to upkeep the high standards set by Winston — that is to present a wide range of topics, in well-researched articles illustrated by accurate comparison photographs.

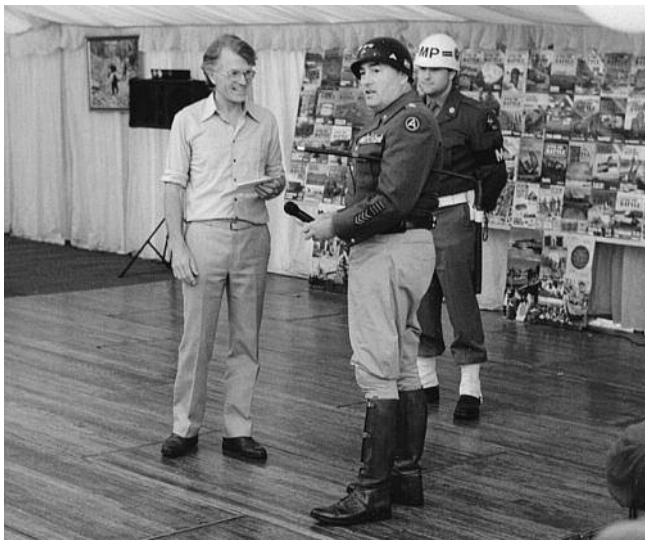
Of course, the past 25 years have presented us and other World War II historians with considerable changes, and the next 25 years will be no different.

First of all, there has been an immense increase in our knowledge of the war. Some of the new facts had a wide impact and have changed our entire conception of the war. For example, the revelation in 1974 of the Ultra secret — that the Allies had decrypted the German secret coded messages — has forced historians to rewrite the history of many a battle and to reconsider the reputation of many a commander and general.

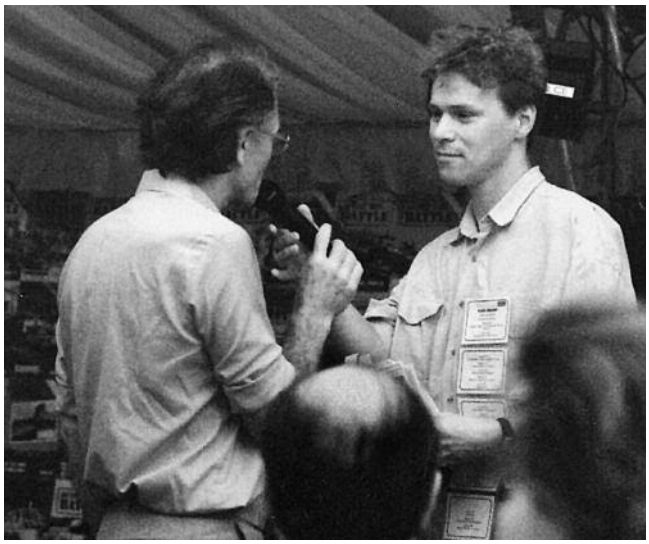
But as least as important for us at *After the Battle* is the growth and increasing quality of research done by local or specialist historians. In the past two decades, almost every local battle, every wartime airfield, every aircraft crash, etc, has found its own historian or group of historians who often, because of their depth of inquiry and local familiarity, have been able to unearth details previously unknown, which in not a few cases enabled them to correct the accepted history. This is true of Britain, but equally so in countries like Germany, Holland, France and elsewhere. *After the Battle* has been able to benefit greatly from the work of these local historians. To give just one example, our story of the Hammelburg Raid (issue 91) would have repeated many of the legends and inaccuracies contained in Anglo-American accounts were it not for the research done by local German historians in the region.

Another development, of particular importance to *After the Battle*, have of course been the changes in the physical appearance of the historic sites connected to the war. Many places that still looked virtually the same as in the war when we took our comparisons, have seen radical changes since. The march of time will undoubtedly continue, with many more sites falling prey to modernity. People sometimes ask us whether we find it more difficult to pinpoint a comparison today than say 10 or 15 years ago. My answer to that would tend to be: no. In my experience, the difficulty of finding a comparison depends, as before, more on the amount of research done beforehand than on the changes in situ. The availability of the wartime caption (providing it is accurate!), good maps, and knowledge of the historical facts are still the best prerequisites for finding the right spot (and also of course the tenacity of the photographer), and will continue to be so in the future.

There is, however, one thing that will definitely make our work more difficult, and that is the decreasing possibility to consult the people who lived through it all: veterans, participants, eyewitnesses. Today, it is still possible to reconstruct a wartime event almost solely on the basis of the personal recollec-



Surprise guest: 'General Patton' (George Kimmins, founder of the George S. Patton Appreciation Society) with his son as escorting MP.



Winston hands over the baton to Karel. The new Editor's badge of office had to be specially lengthened to include his many contributions to the magazine.

Choked with emotion, Winston is presented with a painting symbolising his first trip to Normandy with his old school friend, Christopher Stevens, who died in 1989.

Moment of hilarity as Gordon prepares to cut the '100' cake in true *After the Battle* style using a German NCO's dress sword. Don Marshall called for a Japanese Samurai!

tions of the people involved. (A recent and very good example of this was our story on the IJzendijke explosion in issue 99.) But this will become increasingly difficult in the future. Similarly, help by locals who remember what their village or street looked like in the war — often an invaluable asset when matching a picture — will rapidly become more scarce.

Perhaps the change with the most far-reaching effects for *After the Battle* has been the end of the Cold War and the fall of the Iron Curtain. Because of it, a whole range of historic sites which before were not easily accessible, if not completely out of bounds — especially if you wanted to take photographs — have now become freely accessible. Places which gave us great difficulty when preparing our stories on them in Communist times — like Peenemünde and Colditz in East Germany, Westerplatte and the Wolfsschanze FHQ in Poland, Moscow, Budapest, etc — can now be visited by any Western tourist. At the same time, the fall of the Wall has opened up territories (and picture archives) which will enable us to develop stories which we could not do in the past — the example springing to mind most readily of course being battles on the Eastern Front. Another good example is the Nordhausen story featured in this issue, which we already wanted to do back in the 1970s, but which only became possible after the demise of the GDR.

In their letters, readers regularly express their amazement at that we continue to find new subjects for the magazine, and ask whether we are not afraid to run out of topics. This is a worry we do not have. The Second World War has been and remains an endless source of interesting stories, and we have not nearly exhausted our shortlist. We have yet to cover major battles and campaigns like — to give just two examples — Stalingrad or the Allied invasion of southern France; there remain numerous Pacific operations or Commando actions that we have not yet dealt with, many stories from occupied Europe which are virtually unknown to an Anglo-American public. Also, military planes, ships and vehicles continue to be preserved; crash sites continue to be investigated; and war films continue to be made. With authors contributing from all over the world, and readers tipping us off on little-known stories, we have our work carved out for us well into the 21st Century.

Karel already on the job in a deep discussion with David List who carries out research for us at the Public Record Office (and also wrote the Siwa Oasis story in issue 98).

Although the 100th celebration was held primarily for our past authors and contributors, our permanent staff at Church House also enjoyed the day. L-R: Rob Green (typesetting); Trevor Stonham and Karen Rose (dispatch); Winston (who will remain in overall control as Editor-in-Chief) and Karel; Barbara Rush (order processing), and Dave Cheesewright, ex-1st Battalion, King's Royal Rifle Corps (deliveries). *Inset:* **Phyllis Hough (order processing), late on parade.**